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THE MEASUREMENT OF HUMAN SKILL*

BY

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The Nature of Skill

Perhaps the beginnings of skill are to be found in the graded response. As has often been pointed out, it is a characteristic of a good many very early and very simple kinds of reaction to be of the "all or none" type. There is some evidence, which will have to be considered later, that a "trigger-like" character of effector response, in which nothing happens until a stimulus exerts a certain "pressure" and nothing more happens even when the stimulus exerts much more "pressure," remains to play a little regarded or understood part in quite complicated expressions of mental and bodily behaviour. But it is certainly the case that most of our everyday actions seem to be more or less accurately graded in amount, direction, duration, and other respects in agreement with corresponding variations in the stimuli required to produce them. And such graded action, however simple it may be, has at least one of the fundamental marks of skill—an effector response is not merely set off by a receptor function but is guided and determined by it. The receptor functions that are important in the case of skilled behaviour, however, are, I think, never those alone which indicate changes in shape or volume of muscle. They are always of that kind which claims to register something that is going on in the outside world. So they come to be particularly identified with the operations of the special senses, and especially of those distance receptors which are the basis of tremendous development of the central nervous system. Skill, then, whether bodily or mental, has from the beginning this character of being in touch with demands which come from the outside world. This is what gives it its strong cognitive nature and makes it possible to use phrases such as the one coined by Elliot Smith; "the intellectual respectability of muscular skill."

Whenever we talk of skilled behaviour, however, we mean much more than this simple and basic fact of detailed determination by receptor function. We mean behaviour in which a good many different receptor and effector functions are interlinked, all joined in the pursuit and achievement of some task which, when it is achieved, seems at first sight as if it can be discussed, criticized, evaluated, and even measured in its own right, apart from the means used to bring it about.

Let us consider a few instances of what everybody agrees to call skilled performance. Since it was wartime experience which revived for me a long-standing interest in the nature and conditions of human skill I will begin with two cases which have been a subject of much experiment in recent years.

The bomb-aimer in the aircraft, peering intently through his bomb sight, watches and interprets a series of visual cues coming from successive clusters of landmarks some of which are of predominant importance. From time to time he issues directions to the pilot and receives the answering confirmation. He judges at length that the series has reached its culmination, presses his bomb switch, and the operation, so far as he is concerned, is complete. If the bomb falls within the effective target area the task may be adjudged well and truly done. The visual cues, predetermined and so laid out and seen that one leads to the next and does not merely precede it, may differ every time, though their significant order remains relatively the same. The attendant effector responses may differ also right up to the final pressing of the switch. Yet the criteria of the success or failure of the task seem to remain constant.

The pilot, airborne and flying on his instruments, must be alert to an almost incredibly complex mass of incoming signals—visual, auditory, tactile, thermal, proprioceptive. These, at the appropriate moments, his actions must match. The whole performance, from take-off to landing, is a long-drawn-out interlinkage of receptor and effector functions, forming a veritable series and not merely a succession, each item a step to another step, right to the end. Yet it has often been claimed that an informed observer, sitting by the pilot, knowing nothing, or next to nothing, of the terrific play of his senses and muscles and mind, can criticize, rate, and measure his achievement. More than this is sometimes claimed; for it is said that an observer who never sees either the pilot or his aircraft, but is merely supplied with an objective record of what the machine has done, especially during critical manœuvres, in the course of its flight, can with reasonable success measure or assess the pilot's skill. Even beyond this, though possibly with some exaggeration, it is often considered that the skill of the pilot can be correctly criticized and judged if nothing more is available than an accurate objective record of the landing.

And we could take any other case of admitted human skill and find that exactly the same sort of fundamental considerations apply. The good player of a quick ball game, the surgeon conducting an operation, the physician arriving at a clinical decision—in each case there is the flow from signals interpreted to action carried out, back to further signals and on again to more action, up to the culminating point of the achievement of the task. From beginning to end the signals and actions form a series, not just a succession. The items in the series have, within wide limits, a fluid order and varying qualities. Moreover, there are always plenty of people—we all do it—who are willing to pronounce a verdict on the achievement alone, sizing it up, placing it in

* The first of two Oliver-Sharpey Lectures given at the Royal College of Physicians of London on Jan. 21.

relation to other achievements of the same sort. Can it be that the measure of skill is really a measure of the achievement which skill attains?

As soon as that question is put difficulties will occur to everybody. If the bomb drops in the effective target area once, and the next fifty times drops outside it, in ordinary speech—which may be fickle, but is generally of some psychological interest—we call it a lucky shot. It is clear that measure by achievement must have a lot of achievements to work on, and even then is statistical only. This is an upshot which is openly accepted, or ought to be, by all those who pin their faith to those measures of skill by tests which have become enormously popular of late. I cannot, within the limits of these lectures, consider this kind of measure, but it is certainly not very satisfying to the experimentally minded, who if they wish to avoid or supplement it are forced back upon studies internal to the skill performance itself.

There appears to be something level and uniform in skill performance which is consistent with considerable variations in skill achievement. W. R. Hammond,* a witness of some merit—to speak mildly—says that his most skilled innings was one which gained him a mere 32 runs. When we search the skill performance to find what these uniform characters are and how we can use them to obtain the measures we want, we can, I think, set the problems into three main groups.

There are, first, problems of the linkage of receptor and effector functions; second, problems of the grouping and stability of the constituent items in the full performance; and finally—for we cannot really get away from the "task"—problems of the relation of achievement to means.

Each of these groups can be approached experimentally. If in attempting to describe this approach I deal in the main with work developed during the last few years in the Cambridge Psychological Laboratory, it is not from any lack of appreciation of significant developments made elsewhere, but for two main reasons. First, I cannot well help knowing more about it myself; secondly, for obvious reasons some of it could not be widely reported before, and may therefore be of greater interest to others.

Linkage of Receptor and Effector Functions in Skill Performance

There is one characteristic which crops up over and over again in descriptions of expert skilled performance. The operator is said to have "all the time in the world to do what he wants." This has nothing to do with the absolute speed of the constituent movements, bodily or mental. These may be almost incredibly quick, or they may be leisurely and slow. What is impressive is the absence of any appearance of hurry in the whole operation. There is no jerkiness or snatching, no obvious racing to catch up in one part and forced sauntering to make up in another. The "time" that is spoken of is really "timing," and if we could understand the simple timing mechanisms which the human body and mind must obviously be able to use, and how they work, we should have got some way, at least, towards a measure of degree or level of skill.

Perhaps this is what has made most investigators who have set out to measure skill turn to the classical reaction-time experiment. Considering that every possible skill that can be studied consists of a set of actions and reactions between receptor and effector processes, this seems a sensible thing to do Yet it must be admitted that not one single investigation of reaction times in the classical manner, however elaborate it has been, has thrown any important light on the problems of how to achieve a measure of skill.

The technique of the reaction-time experiment was worked out by the Dutch physiologist Donders in the 1860's. It has not been varied in any important respect since then, except in regard to instrumentation, which has of course enormously improved. Donders did not set out, in any sense whatever, to investigate skill. His aim was simply to measure the time elapsing between the presentation of some simple form of stimulus and some single simple muscle response. Naturally and rightly, therefore, he chose responses which, so far as the experimental measure is concerned, literally begin and finish at the same instant. The finger lifted from a morse key may rise an inch or a mile, it makes no difference. In any conceivable form of skill, however, circumstances of this kind do make a tremendous amount of difference. This is because a given movement has to be followed by another and the second has to be spaced correctly in regard to the first. The time we need is the total reaction time, including that required for the full completion of a given movement, and the recovery time which the organism must have in order that a successive movement should be efficiently performed. This recovery time may have to take account of latent effects produced by the original stimulus whether on the receptor or the effector side.

For example, as is well known, it can be experimentally shown that when a muscle is operating against resistance certain latent effects remain, when its operation is completed, which will automatically interfere with a succeeding reaction of that muscle, or muscle group, and perhaps with related muscle groups. More important still, very likely, every constituent action in the case of most psycho-physical skills must grow out of a setting of bodily or mental posture. This posture must be reset before the succeeding movement can be effective.

Timing of Constituent Reactions

It is, I think, vitally important, if we are to understand the simple timing of constituent actions in the continued exercise of skill, to study and determine the normal limits of duration of these latent effects, of after-contraction in the case of muscle, of the after-effects of certain receptor sensory processes, and of the reset of posture required from move to move in almost all forms of bodily and mental skill. Experiments at Cambridge have recently shown, for instance, that where after-contraction is lacking or excessive certain kinds of skill—those involved in piloting aircraft—are learned with difficulty and when learned are easily broken up.

Now there seems to be a considerable amount of evidence which suggests that in general the recovery time for receptor processes is shorter than that required by effector processes. For example, a year or two ago we set out to study some of the phenomena of visual accommodation. The display consisted of a series of Landolt rings, or broken circles, with the gap north, south, east, or west, in relation to the observer. The rings were presented alternately at near and far distance, and a simple four-way switch was designed by which the operator could indicate the assigned position of the gap. The time and duration of appearance of each item in the display were automatically recorded, and similarly the beginning and end of every reaction and the intervals between successive items, both of display and of response. When the operator was fully used to the situation he was allowed to determine his own preferred rate of working. His first response sets up the second stimulus, his second response the third stimulus, and so on. Naturally the preferred rate fluctuated somewhat for a

* *Cricket—My Destiny*. 1946, p. 128. London: Stanley Paul.

given operator, but not by very much. Preferred rates of different operators varied considerably. We now determine the upper tolerance limit of speed for the whole population, taking as our criterion the occurrence, and perhaps recurrence, of half a dozen closely contiguous errors or omissions. In this case, of course, the rate of exposure of the rings is determined by the experimenter. There is some evidence that the upper tolerance limit remains approximately constant for different operators at an increase of speed proportional to the preferred rate. But the most interesting result is that the study of the records shows that when the operator breaks down he is, in almost all cases, trying to respond, not to the circle that is immediately before him, but to the preceding circle, or to the second or third preceding circle. The receptor and effector series have got out of step, the latter lagging behind. We have some evidence that much the same happens in tracking a rapidly moving target, and dealing with radar displays in extremely quick sequence. And, indeed, this only confirms much common observation. In reading, the eye interprets far ahead of the voice, and if an effort is made to read exceedingly swiftly, " by whole paragraphs," as H. G. Wells used to say, it can be effective only if much of the usual effector association is short-circuited or suppressed. Perhaps the case is most striking of all when posture has to be reset. For then it is the accessory movements, of which normally the operator remains totally unconscious, which markedly and obviously go wrong. The footwork, which may settle the whole body balance, lags and sets everything else out of time. It is extremely tempting to suppose that often when this kind of thing happens, and when the operator is struggling to deal with receptor signals which are no longer present to him, these signals have got on to a rapidly accelerating phase in the curve of immediate forgetting. We have evidence in favour of this, but it is not yet conclusive.

Nothing in the whole course of the total reaction time is rigidly set. Like every other measure of human function this turns out to be a measure of range. There are limits, upper and lower, within which the timing can rapidly fluctuate and the essential adaptive spacing of actions still be maintained. Outside those limits only the skill breaks down.

To a psychologist this is singularly interesting, because most of the conditions that determine the extent of the range can at present be dealt with in psychological terms only. This is not always the case. For a simple objective increase of urgency—in speed, for example, or in the resistance opposed to movement—will be met swiftly by an almost reflex-like increase of effort. Skill that is threatening to deteriorate can, paradoxically, often be restored by an objective increase in the difficulty of the situation. Precisely the same effect, however, can be produced, and on a high level more frequently is produced, by definite volition. How this is done still remains largely unknown, but it is certainly in part achieved by the suppression of flourishes which have become uneconomical, though this essentially does not mean that they always are so. That they are not can indeed be seen in the curious circumstance that on the whole it is easier to shorten than to lengthen the customary overall response time. We have many experiments which show that slowing of skill is very hard to tolerate, and I suspect that this is because suppressing flourishes is less difficult than inventing them.

Another condition which can produce shortening of response time is anticipation. Perhaps this is largely responsible for the demonstrated fact that real experts retain their skill under conditions which defeat the beginner or the performer of ordinary ability. For example, receiving and sending wireless messages at speed can be adversely affected by a steep rise of temperature and humidity. But whereas the upper limit of effective temperature for the average performer comes rather sharply at 83° F. (28.3° C.), the expert continues without serious disturbance for another 17° F. (9.4° C.). Yet the overall response times for all performers remain closely comparable under all ordinary conditions.

Finally, anything that can arrest the speedy decay of immediate memory will tend to lengthen the overall effective response times and keep receptor and effector functions sufficiently in step for long periods. The conditions which promote this seem to be largely on the display side, in the ordering of the signals for skill which have to be dealt with by the senses, and especially the distance senses. A degree of novelty just enough to combat the peripheral processes of adaptation and the central tendencies of habituation is desirable. Little is known about these conditions as yet, but it has become clear that the placing of signals, especially towards the upper and leftward parts of a visual field, their movement and direction of movement, and the utilization of contrast and colour are all of them important.

The Phenomenon of " Lowered Standard "

On the other side, and working all the time towards an increased liability for items in skill behaviour to get awkwardly out of phase one with another, are adaptation and habituation, and something different from both—the curious phenomenon of " lowered standard." Like a lot of other things in behaviour, once this is defined and clarified under experimental control abundant illustrations can be found in everyday experience. This often lays the psychologist under the charge of discovering only what everybody already knows; but that kind of discovery is in fact as important for exact knowledge as any other. We first noticed the case of " lowered standard " when we were studying the kind of deterioration which can be expected to affect the skill of the air pilot who is flying on instruments for long periods without rest. The operation, like that of every other instrument reader, is essentially an exercise in the discrimination—usually the visual discrimination—of alignment and misalignment. The operator must notice the coincidence of a pointer or other indicator with, or its variation from, some mark or member of a series of marks on his instrument. For two reasons it is no use at all taking a measure of absolute visual or other spatial discrimination threshold and deducing anything from that. The observer has to respond not only to the misalignment but to the direction of it. He has not only to notice the appropriate mark on the instrument but to identify it among a number of other marks. It has been known for years that either of these requirements will push up the discrimination threshold, and if the amount of the rise depends at all on the absolute discrimination threshold their functional relations are certainly unknown. On top of this it is still no use allowing for these matters and then getting a measure of effective threshold *outside* of the skill in any succession of isolated graded tests. For within the skill there are always two thresholds—one a measure of what the observer *can* do, and the other of what is treated as *worth* doing. These can, and constantly do, vary quite independently. At the beginning of exercise they normally approximate to the same value though they are never quite identical. With continued exercise, or under a variety of other conditions, they diverge more and more. The threshold of discrimination—what the operator *can* do—is little affected, except in extreme cases; the threshold of indifference—what is treated as *worth* doing—may rise to double, treble, or

quadruple its original value. Moreover, however this standard of work is set it may be, though it is not necessarily, entirely a neurological affair. The operator may know nothing about it. He may assert that his skill is exactly as it was, and if he is stopped and his threshold of discrimination measured he may appear to be right. For a genuine measure of his skill he needs to have both these thresholds determined within the operation itself.

Results of These Experimental Studies

Let me now try to sum up the main results of these developing experimental studies of skill so far as the linkage of receptor and effector functions is concerned. By far the most important one is that no measure of isolated function can throw any light upon skill or immediate skill potentiality. The crucial point in the linkage with which we are concerned is the accurate timing of the constituent items within their series. So far as the sensorimotor characteristics of the process go it seems that the important thing is the determination of the overall response times—including the recovery time—in the march from interpretation to action and from action to interpretation. There is a tendency for effector response time to lag and for action to get out of step with signals for action. This can be arrested within limits by increased objective urgency, by volition, and by anticipation, provided it does not run very far ahead. It will be facilitated, unless special precautions are taken, by a rapid fall of immediate recall and by the automatic increase of indifference threshold. Looking at the whole matter from the point of view of classical psychological experiment, the field is now set for a thorough reorientation of the traditional study of reaction times and of the functions of latent after-impulses.

[*The second lecture will appear in our next issue.*]

A CONCEPTION OF INDUSTRIAL HEALTH*

BY

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At any moment of time, and especially in a relatively free-thinking community, the volume of public support lent to an idea is often as important as the intrinsic novelty of the idea itself, and when the pressure of opinion surpasses a certain critical value action leaps from latency to life. The conception of industrial health now has reached this point. It is, however, always a salutary exercise, on starting a new venture, to consider whether its aims and outlook are really original, whether they represent a step in a process of thought which started long ago, or whether they are merely the return of a cyclical fashion.

Some Preliminary Thoughts

It is also appropriate now to put forward some preliminary thoughts about this new Nuffield Department in King's College, and about the methods of approach which it is intended to adopt in order to study some of the facets of this very wide problem of industrial health. But first, perhaps, the very word "health" itself requires some consideration, as we must remember that the classical conception, which the Greeks called ὑγεία, had in their day a limited application, usually to the soundness of the body only, and now, like so many other words of like derivation, it has lost caste and become our English "hygiene" with its stereotyped suggestion of soap and water, teeth and tooth-brushes, forms and files, strictly departmental thinking, and rather dull courses of lectures.

But health surely means, among other things, freedom from disease, good performance at the job, whether of mind or hand, the right rate of growth, and the happiness born of a satisfactory wholeness of existence. Moreover, in their wisdom the founders of this Chair intended to indicate a breadth of interest, especially in the direction of the causation and prevention of disease, which would not have been clearly shown by the use of any other word. It is, then, worth while taking trouble to define what is meant by health, because when a new subject or a new attitude towards an old subject comes into view it is only too easy to be under a misconception about what is meant, or even to say that there is no such thing; and, indeed, the most recent attitude towards medicine, which is often thoughtlessly criticized along these lines, is that of social medicine, which some people deny exists at all, and which others even think is medicine in relation to the State.

It may, therefore, be suggested now that the field of study of our new department here may be considered to be the reciprocal and triple relation between job and health and social state, and it is worth while noting at this point that this contrasts somewhat with a conception based upon industrial *medicine* or *disease* as usually conceived, because there is, of course, no true dividing line between industrial and non-industrial illness.

Foundations of Industrial Health

As long ago as 1670 the Italian doctor Ramazzini laid the foundation stone of industrial health with his book *De Morbis Artificum Diatriba: A Dissertation on the Diseases of Workmen*. Ramazzini was not only a bedside doctor but spent much of his time visiting workshops and mines, noting especially the conditions of work, and his conception of industrial health was wide, as shown by the later editions of his book, which included chapters not only upon the diseases of learned men but even upon the health of nuns—an investigation which we may well imagine to have taxed his ingenuity to a high degree and to have involved secret methods, perhaps including even personal disguise.

After a long interval this work was followed, in the middle of the eighteenth century, by a most brilliant practical demonstration of preventive medicine applied to a small community by the naval captain James Cook, who, on a voyage which lasted more than three years, which stretched from latitude 52° N. to 71° S., and which meant, therefore, going through the Tropics, lost through illness but one out of his crew of 118 men. The Royal Society appropriately marked this feat by awarding him the Copley medal for his paper entitled "The Method taken for Preserving the Health of the Crew of His Majesty's Ship, the *Resolution*, during her late voyage round the world." Now Cook's outstanding demonstration, the more notable because he was a layman, was not so much due to his having made any new discoveries in the science of preventive medicine, but can be ascribed almost entirely to his making the fullest application of the principles which were known at the time, to his attention to detail, and to the fact that he had complete charge of a small and isolated community.

The next step forward in this subject came in 1831 with the publication of a book entitled the *Effects of the Arts*

* An inaugural lecture delivered at King's College on Feb. 24, 1947.

Trades, and Professions and Habits of Living on Health and Longevity, with Suggestions for the removal of many of the agents which produce Disease and shorten the duration of Life, by that famous Leeds clinical surgeon Charles Turner Thackrah. This publication went into two editions in two successive years, but unfortunately the writer died at an early age, long before his prime.

The next figure in this field, who towers, moreover, above all others before or since, is that of the great lay sociological sanitarian Edwin Chadwick. In the nineteenth century it was Edwin Chadwick who laid the foundations of what we now call social and industrial health. In conjunction with his colleague, Dr. Southwood Smith, he undertook an inquiry into the effects of labour in factories upon the general condition of the operative classes, and carried out an investigation upon the employees of the East India Company. Chadwick pointed out that the recording of the incidence of sickness is the first step necessary to indicate its origin, and he suggested that all records be related to the job, wages, price of food, and, indeed, to any and every change in the material circumstances which affect the workpeople. Moreover, this great man was also interested in the effect of an abnormal environment upon the human being, and he therefore undertook a research to find out how tailors reacted to the hot and humid atmosphere in which they worked.

Set this work against that being done and the outlook which prevails to-day, when we see new departments of social medicine and public health using the morbidity or sickness survey as one of their chief weapons of inquiry, and when recently the Medical Research Council and the Royal Navy have together intensively investigated the action of hot and humid atmospheres upon a man's performance. Notice that we are only now beginning to give effect to ideas first put forward by Chadwick nearly 100 years ago.

In the outlook of three of these pioneers—Ramazzini, Thackrah, and Chadwick, a physician, a surgeon, and a non-medical sociologist—can be seen three of the four essential methods of approach for any new department of industrial health—namely, the bedside or clinical, the outdoor or field, and the statistical, for in those days the laboratory had not attained its present eminence. It may incidentally be noted here that Chadwick's point of view demonstrates the artificiality of dividing social from industrial health, since he emphasized that health is related not only to job alone but to every circumstance which surrounds the working man.

Recent Trends in Industrial Medicine

The last 50 years have not, perhaps, produced any such outstanding individual figures as these, but they have been notable for the development of a number of important trends in this branch of knowledge. *Pari passu* with the Industrial Revolution, which of course is still taking place, and with the introduction of more and more machinery, came a volume of preventive legislation, and with it the setting up of both mechanical and medical inspectorates directly responsible to the Government, for bringing about compliance with the law. With the increase in the complexity of industry comes the widening of the range of chemical substances which are used, and we have therefore seen a great rise in preventive toxicology, associated in the past with the name of Sir Thomas Legge; and indeed, until recently, this approach to the subject has been almost synonymous with what is meant by industrial health. Likewise, too, with increasing mechanization has come the rise and fall of the conception of fatigue as a scientific entity, with the subsequent realization that its study is merely another way of looking at all the different environmental influences acting upon the working man or woman.

We have also seen in the last 30 years a great increase in research by committees, sometimes sitting at a distance from where the problem lies; and we have witnessed an attempt, with the various Compensation Acts, to equate money with injury and illness, together with an only partially successful realization that a physical token cannot replace even that which is physical in a human being, and still less can it replace that which is psychological, which indeed money may make worse. These are important points to keep before us, because every illness of the body affects the mind, and many of the mind the body too. This attempted false equation produces also the attitude of mind which, though perhaps rightly, pays a man more for doing a dangerous job, then wrongly stops at that point and forgets to make it safer.

Two world wars have greatly accelerated the winning of knowledge in this field, but some of the early effort in the late war was either a repetition of former work or it was designed to re-emphasize principles which were already known, and we observed the melancholy but understandable spectacle in the stress of 1940 and early 1941 of industry attempting to run in almost complete ignorance of much of what had already been discovered by the Industrial Fatigue Research Board of the Medical Research Committee in the previous war.

During the recent struggle, however, a type of research with a rather different emphasis began to appear in each of the three armed Forces, the so-called personnel research, which was aimed largely at attempting to fit more closely to his needs the many and often very complex mechanical situations in which the modern fighting man finds himself—to use, in other words, the principles of anatomy and physiology to modify the mechanical *milieu*.

The New Nuffield Department

How, then, in the light of this brief historical survey should the new department here set about its job? It is intended to direct the effort about equally into three interconnected spheres—the outdoor field of industry, the hospital, and the laboratory. In the field, man will be considered socially, in his group or herd; and here an attempt will be made to assess his liability to disease and accident, and, in certain cases perhaps, his performance at the job, and to set these against the conditions in which he lives and works. The methods of statistical survey will be used here. The experiment, as it were, is already going on, and we have therefore to devise the best methods of sifting out the answers to our questions and, indeed, to consider carefully what questions should be posed. We hope to undertake such a survey in some representative parts of industry in this area. The problems here are not the major illness or the dramatic fatal accident, but the short-term illness and, in some industries, the enormous number of small accidents and injuries, some of which become infected and leave much greater disability. Our thinking about accidents often tends to be clouded by too much disapproving attention as to whose fault it was, or whether there was carelessness or not; it is not taken up enough with improving what may be an unsatisfactory relationship between a man and his machine, and, by attention to fundamental mechanical design, with making it impossible for an accident to happen to even the biggest fool.

The design of any piece of apparatus which comes into contact with the human being must be conceived upon a basis broad enough to include not only the aesthetic

approach but also some simple principles of anatomy and physiology. These do not, of course, compete with the aesthetic point of view, but supplement it, because surely a thing purposely designed to fit the healthy human body is no less beautiful than one which does not do so. If, for example, a machine is needed, it is necessary to make it fit the sizes of the range of men or women working it. It must be the right width and height, and attention must be given to the method of control; the handles must be so placed that smooth direction can be obtained, and they must turn in the most natural way so as not to be too easy or too stiff. Thus, examples of the type of questions which arise are: Is it better to have a push-pull lever or a turning handle?; and, How must the controls themselves be shaped so that they do not rub the hands and cause breaches in the skin surface which may afterwards become infected? If the machine has indicators to tell the man or woman working it whether it is on or off, whether it is going too fast or slow or in what direction, then these too must be designed and placed for easy reading; and this at once raises the whole problem of the best way to display a piece of information to the human being. Many points here come to mind: What information is it necessary to display at all? Is it better to combine a system giving information both to eyes and to ears? Should the display be round like a clock face, or should it go up and down or from side to side? Is it better to use coloured lights, remembering that about 8% of men cannot distinguish red from green by colour alone, and that therefore indicator lights must have another clue, perhaps in their position or their spacing?

One of the great problems of interest in this whole field of the relationship of functional physiology to industrial design is how to plan and perfect experiments to give objective methods of assessment, and how to use the human being experimentally as a yardstick against which to measure the machine.

Service experience during the war was in advance of present civilian practice on this subject, and machines, like aircraft, were designed by a number of small committees composed of engineers, manufacturers, pilots, anatomists, and physiologists, so that at least an attempt was made to fit machine and man together. It may be thought at first that this method may be cumbersome and slow, but it is surely clear that if it was efficient enough to work in a war of such rapid evolution as the last it is efficient enough to serve civilian uses now.

The results of this type of work in the department, all of which is fairly long-term, with the year as a unit of time, will of course be made generally available to all concerned, and I should like to feel that it will represent the joint co-operation of employer, working man, and college—in short, of Tyneside as a whole.

In addition to the interesting problems already mentioned it is important to think of health, or lack of it, as a personal and individual state to be studied at the bedside in that relationship between doctor and patient which still contains all that is best in medicine; for when a sick person comes to see a doctor, what he wants is help, and not a learned statistical analysis of his condition. It follows, therefore, that one of the fundamental difficulties to be faced in a department of this sort is how to combine the coldly critical scientific outlook of the laboratory with warm humanitarianism at the patient's bedside.

The Social Aspect

In the present way of practice in a hospital there tend to be two big gaps in our information which cannot adequately be filled by merely questioning the patient, and they can perhaps be indicated here by asking: What social influences have been acting on him in the past before he came, and what is going to happen to him when he leaves? In other words, we usually have little detailed knowledge about his home or job, or about his progress on return. To provide this knowledge, a special type of visitor is needed, based upon the hospital and operating as a member of a team from a self-contained unit which has male and female patients, medical, nursing, and social staff all in one small area and under unified control.

The duties of this visitor or social worker will be to bring information about the patient's home surroundings and economic background, and, if possible, about his industrial environment as well, and to follow him up on his recovery and return to work. But it may be that we must have a visiting team of two—one for the home and the other for the job.

There are a number of possible trainings which fit a woman for this job of social visiting—those of almoner, psychiatric social worker, or health visitor come at once to mind—but the ideal perhaps would be an almoner with a factory inspector's training in addition. Here personality precedes training in importance, and it is essential that she should work as a member of a team and consider the social information gained objectively under a number of defined headings. There is a tendency for some types of this work to become wordy, diffuse, and sentimental; it is proposed, therefore, that the worker in this outlined department shall spend part of her time upon a specific problem which will provide as a basis something concrete and scientifically planned.

Indeed, the time is now passing when the social work of a large hospital can be adequately performed by an autonomous department functioning without a well-marked chain of responsibility, either to the patient or to the patient's doctor. Moreover, this type of work at its best is time-consuming and personal to the patient or his relatives; surely the social worker should undertake it in direct co-operation with the physician or surgeon who is in charge, and she should act as a full liaison officer between the patient's hospital and home, and in addition should take her share in teaching.

Some of the patients will be suffering from industrial disease within the narrow meaning of the term, which will demonstrate the effect of job on health; but a small proportion will have general medical illnesses, thus linking our specialty closely to the main subject—medicine—and, at the same time, allowing us to study the relationship between returning health and the job.

The Ward as a Co-ordinating Point

The ward, then, will be the co-ordinating point where information from the patient's home and from his work is welded on to the impression gained by the usual bedside methods. This synthesis may well take the form of a small conference attended by representatives of the four groups of people having contact with the patient—the medical, nursing, and social staff and students—because each will have something to add and, in exchange, something to learn.

When, therefore, the patient arrives in hospital he or she will be examined by the doctor in the usual way, but in addition permission will be sought by the social visitor to go to the home, and also to the patient's job; information from both these will be added to his notes, which will also contain a statement on the progress made after he has left, with special reference to such things as how long he

takes to return to his full job, and whether he maintains it or changes to another. In this way it is hoped to link together the technical excellence of the teaching hospital with the social slant of the family physician and with the industrial slant which only the factory doctor on the spot usually can have, and so to permit the passing of knowledge from one medical compartment to another. This means three diagnoses—home, job, and patient—instead of one, together with a follow-up, in one set of patients' notes.

There will also be an out-patient department, working closely in conjunction with the ward, where people will be seen who are not ill enough to be in bed, and where they and their doctors can be advised about their illnesses. It is most important that a department which spends the greater part of its time upon research should keep its feet firmly on the ground of everyday medicine, and it should therefore share, even if only to a small extent, the hospital's daily work.

From time to time students and assistant doctors will accompany the social worker on visits to gain first-hand knowledge of home and working life, because it is clearly illogical that the first time that a medical student sees a patient in his own home (with the exception of a brief training in midwifery) is as a general practitioner after he is qualified; and the same is true of seeing the patient at his work, which he may never do unless he becomes an industrial doctor. It must never be forgotten that a man is the same man whether at his work or in his home, and, ideally, the same doctor should know about both parts of his life. It is important, moreover, that a university department such as this should attempt to practise and to preach that which is biologically true rather than that which seems at the moment to be administratively expedient, and that it should also try to do something to offset the increasing compartmentation which is spreading so quickly through medicine as a subject.

This conception is, of course, entirely experimental, and there are clearly a number of potentially weak points which will need watching: for example, the proportion of time spent travelling to homes and factories may prove too great; patients or their wives may resent a visitor intruding into houses already somewhat over-visited, and the same may happen at the places where they work; but these are only stimulating difficulties, to be overcome with tact and the right approach.

The New Department and the Student

The laboratory in the new department will be used as a tool in the investigation of the more intricate and the more fundamental relationship between man and machine, and here also will be studied those problems in mechanical design already mentioned. This has a practical as well as an academic interest, because it is directed towards better mechanical control, less fatigue, and fewer accidents.

Now health, like charity, should begin at home, and in the future it may well be that the college student's health becomes the responsibility of this department. But care must be taken to distinguish between the detection of a disease and its prevention. One of the most important functions of any students' doctor will be to act as health adviser to the college. He must consider it as an industrial organization, have a good knowledge of the physical and psychological conditions of each faculty, and thus know something about the educational and other loads which press upon the various groups of men and women. He will then in time be able to advise upon such things. On the whole, good organization of work, play, food, and lodgings will prevent more disease than detective methods working relatively late; routine medical examination must of course be done only after it has been decided to admit the student, and the dulling effect upon the doctor of examining large numbers of normal young people must be considered. We know little about the liability of young men and women to disease, or how they spend their money or their time, and surely there is here an opportunity to combine both prevention and research.

You will no doubt have noticed that, apart from a few passing references, little has yet been said about teaching, and this is because from our departmental terms of reference it must stand second to research. Nowadays the layman rightly expects the doctor to have a wide intellectual horizon and more knowledge of the cause and prevention of disease, and a better appreciation of what is common and important and of what is uncommon and unimportant, however technically interesting the uncommon state may be; yet it may well be doubted in this case whether the customer really is getting what he needs. Mental flexibility is not encouraged by an overcrowded course which teaches too many facts that are of little use, and which does not stress enough the scientific method of their collection, and still less their orderly arrangement and rearrangement in logical argument. Reflective thought flourishes only when there is leisure and free informal discussion among small groups of people—and the medical student is at present allowed too little of either. Indeed, sooner or later the present method must be left behind whereby students are given a course in what is really gross clinical pathology of the museum type and then an attempt is made to undo the wrong with some sort of postgraduate technical diploma. The aim should be to produce the type of mind which can design a way of life instead of merely prescribing physic, which knows something about what is inside and what is outside the normal environmental range, and which thinks in terms of prevention rather than of so-called cure. Industrial health is not a specialty within the usual meaning of the term, but is a reorientation of the general subject, and it is highly doubtful whether in the future it will be wise to organize it as a narrow-minded special service. After all, most places of employment are small and could, and should, be looked after by the general practitioners in the area, with advantage both to doctor and to patient, since the doctor will have a wider type of interest and the patient will be cared for by a man who has a better chance of knowing both his job and his home.

How, then, in the light of these considerations should industrial health be taught? It is surely clear that it may perhaps one day replace in the general medical course some dead wood which must be cut away, and that it must not be made an additional subject to be loaded on the already groaning student. A game is learned best by those who play it, and it is proposed, therefore, that students should be allowed to co-operate in the experimental work, when they will learn something about the scientific method and about the application of physiological principles to practical problems. Again, visits to workplace and home should rank as part of the usual course in medicine, and it may well be that it should be compulsory for every student to attend a number of the small case conferences and clinical discussions already mentioned, so that he can see an attempt being made to paint the whole picture of a patient's health. The formal lecture will not rank high in our teaching plans, because in a course like this the need is not for facts but for food for thought, and this is best imparted informally to the smallest number possible. Much of the teaching of this subject will be oblique, using visual methods of display by photographs and other changing demonstrations. For example, there

may well be staged, in some convenient place, a selection of protective industrial clothing. A miner, after all, wears a hat, a lamp, and sometimes knee-pads; but few students know exactly why, and still less do they realize that these represent elementary steps in preventive medicine.

Staffing the Department

I have dealt to some extent with what this department has to do, and now can outline briefly the staff needed to undertake the task. In the early stages of the bedside work full clinical responsibility should be borne by the departmental head; but later, as the work increases and plans mature, a competent clinician capable, if necessary, of bearing the full load must be employed. He should, moreover, have another interest in some investigation of his own. Under him would come two junior assistants, spending part of their time on clinical work and part on fundamental research, and part again in helping with the routine departmental teaching. These men or women will be at the stage of deciding whether, or how, they intend to advance themselves, and, if so, in which of the branches of activity displayed before them in the department; and one of them will join the social worker as a small combined team of two. Finally will come a house-physician of some previous medical experience who may one day become an assistant in his turn.

On the laboratory side it is most necessary to have a man who combines a knowledge of statistics with a social or biological outlook and who will perhaps in time develop a small subdepartment of his own; there are needed, too, a physicist or engineer who can plan and make machinery to study our problems of design, and a non-medical but biological assistant to use this machinery as a tool to answer the questions posed. Occasionally, but very rarely, one man can do both of these; but usually the purer type of scientist has difficulty in dealing with the variability of response of human beings, and, vice versa, few biologists have the necessary technical knowledge to design the apparatus used. Finally there must be, of course, ample help in computation and secretarial work, because otherwise much time will be wasted.

The "foreign policy" of a department such as this should be to maintain the closest contact with both employer and employed, to eschew politics and compensation questions like the plague, and to avoid the role of expert witness. It should, moreover, work in close connexion with the local department of public health, and with the sister—perhaps one should say the elder sister—Nuffield Department of Child Health.

Conclusion

To summarize the story, it can perhaps be said that an organization such as this should have five main duties: (1) to its patients, which it must treat as persons as well as members of an industrial or social group; (2) to its subject, which it may advance a little, chiefly by affording a seed-bed for the germination of potential workers in this field; (3) to the students, by reorientating their medical horizon; (4) to its college, by concentrating mostly upon research, and only slightly upon teaching; and (5) to employer and employed by maintaining a tactful, fair, and independent attitude in its outside work.

May I now conclude with some words of John Dryden's which do, I think, foreshadow this new spirit in preventive medicine?

> "Better to hunt in fields for health unbought,
> Than fee the doctor for a nauseous draught,
> The wise, for cure, on exercise depend;
> God never made his work for man to mend."

SURGICAL EMPHYSEMA DUE TO COMPRESSED AIR

BY

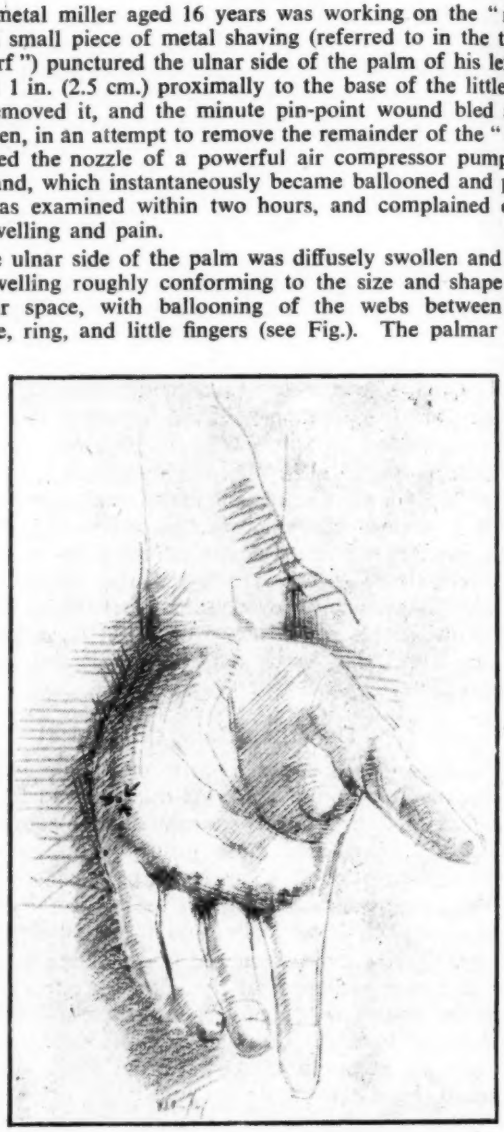
A. M. DESMOND, F.R.C.S.

In the last twenty years compressed air has been employed in industry on an increasing scale, and the hazards associated with its careless use are now well recognized. Emphasis has been placed particularly on injuries of the rectum and colon, and Wyllys Andrews (1911) and others have given excellent surveys of this aspect of the subject. One feels, however, that the occurrence of tissue emphysema in the presence of even the smallest wounds has not been sufficiently brought to notice, and for this reason the following case is considered worth recording.

Case Report

A metal miller aged 16 years was working on the "miller," and a small piece of metal shaving (referred to in the trade as "swarf") punctured the ulnar side of the palm of his left hand about 1 in. (2.5 cm.) proximally to the base of the little finger. He removed it, and the minute pin-point wound bled a little. He then, in an attempt to remove the remainder of the "swarf," directed the nozzle of a powerful air compressor pump on to his hand, which instantaneously became ballooned and painful. He was examined within two hours, and complained only of the swelling and pain.

The ulnar side of the palm was diffusely swollen and tender, the swelling roughly conforming to the size and shape of the palmar space, with ballooning of the webs between index, middle, ring, and little fingers (see Fig.). The palmar creases



Showing the ballooning of the palmar tissues. The puncture wound is indicated by arrows.

over the area involved were almost obliterated. No crepitus was elicited. The remainder of the hand, the fingers, and the forearm were normal; there was no swelling of the dorsum. There was a pin-point puncture wound in the position described above, and scattered over the surface of the hand were multiple cuticular abrasions. An *x*-ray photograph showed air in the

soft tissues of the ulnar side of the hand and of the webs between the fingers, but none on the thenar side. The emphysema thus appeared to be confined mainly to the palmar space and its lumbrical extensions.

He was treated by local heat, sling immobilization, and a prophylactic course of sulphadiazine, 1 g. by mouth every four hours. Next day the hand remained swollen but was less painful. There were slight pyrexia (99° F.; 37.2° C.) and some redness around the puncture wound. Sulphadiazine and immobilization were therefore continued. The following day the swelling had completely subsided; there was full function and no pain. A further *x*-ray examination showed a normal soft-tissue shadow, and he returned to work six days after the accident.

Discussion

The air compressor responsible for this accident is one used for blowing the metal filings and chips away from the metal being cut, so that the field of work is not obscured. It is similar to the familiar automatic pump used in garages for inflating tyres, and pumps air at a pressure of 75–90 lb. per sq. in. (5–6 kg. per sq. cm.). When directed on to the unabraded skin it causes no discomfort but is sufficient to make a deep indentation in the tissues. Whitwell (1944) published a somewhat similar case, in which subcutaneous emphysema occurred in the middle finger from an identical cause, but he was able to elicit the typical crepitus of surgical emphysema. In his case the condition subsided without sepsis. Another use of compressed air is as a method of cooling when using a lathe, etc. A third, and more extensive, use is in compressed-air tools such as pneumatic drills, riveters, etc. Parker (1937) records a case of extensive emphysema of the whole hand in which a workman, having a deep wound, accidentally pressed his palm over the exhaust opening of a pneumatic drill. In this case, too, the emphysema subsided without complications.

The present case is of interest for two reasons. First, in spite of the extremely small wound, a large quantity of air penetrated even to the deep subfascial tissues; secondly, the extraordinary manner in which the air inflated the palmar space. It will be remembered that this space is bounded by the intermediate palmar septum laterally, and that this septum lies between the flexor tendons of the index finger and the second lumbrical muscle. The skiagram showed that the air in the tissues reached exactly to this point and did not encroach on the thenar space. It will also be remembered that the palmar space communicates distally with the subcutaneous tissues at the webs between the fingers along the lumbrical muscles. The air was well shown in these extensions in the *x*-ray picture. The palmar boundary of the space is the dense palmar fascia and the common flexor synovial sheath. This adequately explains why crepitus was not elicited. The dorsal confines of the space are the third, fourth, and fifth metacarpal bones, the fascia covering the interosseous muscles of the third and fourth spaces, and the fascia covering the medial part of the transverse head of the adductor pollicis. These would prevent extension of air into the dorsum of the hand. Medially the boundary of the space is the medial palmar septum, lying close to the lateral side of the opponens minimi digiti and passing deeply to be attached to the anterior surface of the fifth metacarpal bone. The septum extends distally to become continuous with the fibrous tendon sheath of the little finger on its ulnar side. Proximally it reaches the hook of the hamate and the pisohamate ligament and is pierced by the deep branches of the ulnar nerve and artery. This may possibly explain the presence of air in the subcutaneous tissues around the ulnar styloid process and in the subcutaneous tissues on the medial aspect of the base of the little finger in the *x* ray. However, there appeared to be some more superficial air in the hypothenar region, and it is probable that it penetrated the subcutaneous tissues here before the larger quantity entered the palmar space.

These accidents are well known in industrial medicine, and no record of any untoward results could be found in the literature. However, should infection occur, it is conceivable, if not probable, that the consequences might be more serious to the patient. Whether the accident could occur in an already infected wound, walled off by tissue reaction, it is impossible to say, but, if so, a spread of infection would be practically inevitable. It would appear to be of utmost importance that the condition be recognized early and prophylactic treatment undertaken. Furthermore, the workmen should be warned of the possibility of the occurrence. Not one workman at the small metal milling factory at which this incident occurred was aware of these dangers.

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DIGITAL FOREIGN BODIES IN SPOT-WELDERS

BY

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Of the countless varieties of injuries sustained by the human body in this industrial age the hand receives perhaps more than its fair share. An unusual type of lesion has come to our notice lately. This is an industrial injury to the hand and fingers sustained by those engaged on the job of spot-welding.

Resistance welding, or spot-welding as it is more popularly called, is a process by which two or more pieces of metal are joined together by a combination of mechanical pressure and the heat which is generated in the metal by the passage of an electric current. The pieces to be welded are held under pressure between two copper electrodes and a current is caused to flow. As an example of this, when spot-welding two thicknesses of mild steel sheet each 0.04 in. (1 mm.)

FIG. 1.—Girl using spot-welding machine; showing the use of the right hand to position the part to be welded and how this brings her fingers in close proximity to the electrodes, whence the sparks emanate.

FIG. 2.—Man using spot-welding gun; showing that his hands are well away from the electrodes.

thick the welding conditions are: diameter of tip surface of electrodes, 0.25 in. (0.63 cm.); welding pressure on electrode-tip surface, 10,000 lb./sq. in. (700 kg./sq. cm.); welding current, 8,000 amperes; voltage across the electrodes, less than 1 volt; welding time 0.2 second.

In practice, spot-welding is applied either by means of a stationary "machine" (Fig. 1) or by means of a mobile "gun" (Fig. 2). The machine is used when small objects are being welded, and the gun is used on a large job. When using the machine the small object is held between the electrodes by hand, a pedal switch is depressed, and this causes the electrodes to approximate and squeeze the metal parts together and the current to flow. In the case of the gun, which is portable, when its electrodes are brought into position one hand is used to steady it, the other to switch on the current; thus both hands are necessarily far away from the area to be welded. In each type, as the current is flowing and the weld is being made, there may be a spraying outwards of sparks of red-hot metallic particles. For the most part this "splashing" of sparks is absent or negligible in amount, but in some instances, for a variety of reasons, a much heavier "splash" occurs.

This discharge of sparks can be seen wherever spot-welding is being done. They collide with various parts of the worker and his clothing, but it is the common finding of industrial medical officers that on the whole they do little or no damage. A spot-welding operator usually shows evidences of his occupation by the presence of minute superficial burns of his hands and arms caused by contact with the flying red-hot particles, but these burns are regarded as a trivial and transitory annoyance and produce no disability. Occasionally injury to the eye occurs, but that is outside the scope of the present article.

Six months ago we noticed in the factory a case (Case 1) in which the sparks had penetrated the fingers of a worker, and since that time we have been on the look-out for such cases. Eleven more have presented themselves. These cases have all occurred in the factory in which one of us (W. A. B. R.) is medical officer, and have all been referred for surgical treatment to this unit.

Reports of 12 Cases

Case 1.—C. M., a female spot-welder aged 18. While spot-welding small steel brackets on Nov. 13, 1945, she received a jet of sparks from the welding machine into the tip of her right forefinger. She felt a stabbing pain and rapidly the finger became white at the tip, painful, and began to swell. The wound of entry was so minute as to be almost invisible after the event. The pulp felt and looked hard. On Nov. 20 she reported the injury at the works hospital. Treatment was instituted, and kaolin poultices were applied daily for a week. At the end of that time a small metallic foreign body was picked out with an eye-spud, and temporarily the condition settled. On Jan. 1, 1946, the finger became painful again; another piece of metal was removed and a small pinhead abscess evacuated. By Feb. 25 the acute pain, swelling, and tenderness had subsided, but she complained of a pricking sensation in the finger when handling small objects, and tenderness to the slightest touch. Her disability had necessitated a change of job to one in which fine finger movements were not essential.

On examination a very hard tender scar at the finger-tip had resulted from the injury and the sepsis that followed. There was no acute inflammation and no axillary adenitis. The fingers and hand were mobile and otherwise normal. A skiagram showed multiple M.F.B.s lying in the pulp of the digit parallel to the terminal phalanx. No evidence of bone injury or disease was seen. *Surgical Treatment.*—On March 11 a lateral incision was made, extending into the cornified entry wound at the finger-tip, and a minute superficial cavity containing necrotic material was opened up. There was no frank pus. Deep and proximal to this cavity the M.F.B.s were located and as many as possible extracted by the point of the knife. The wound healed by first intention, and when seen again recently the patient had no complaint. She had returned to her old job of spot-welding on April 8.

Case 2.—T. C., a male spot-welder aged 42, while welding on Jan. 26, 1946, received a spray of sparks from the machine into the dorsum of the terminal phalanx of his right middle finger. It quickly became swollen and painful. He went to the works hospital and was treated by a sterile dressing and, later, kaolin poultices. During the next two months small pieces of metal were extracted on two occasions from suppurating sinuses at the site of injury. On March 19 he complained of tenderness and a throbbing pain in the finger. On examination a hard, blackened, and calloused spot was seen at the wound of entry on the dorsum of the terminal phalanx of the middle finger and a similar lesion was noted on the dorsum of the ring-finger. Both areas were tender to pressure. There was no acute inflammation noted, no lymphangitis or axillary adenitis. He thought the ring-finger lesion had occurred earlier in January; but he wasn't sure, and it did not give him trouble. A skiagram showed multiple M.F.B.s in ring- and middle fingers, but no evidence of bone injury or disease. *Treatment.*—By March 25, when he attended for surgical treatment, a small spot of pus was visible at the entry wound on the middle finger and the axillary glands were enlarged and tender. The superficial abscess on the middle finger was incised and two pieces of metal which lay loose in the cavity were removed and the incision left open for drainage. From the ring-finger numerous small M.F.B.s were extracted and primary suture was carried out. By April 9 both wounds were well healed and painless, and he had resumed work as a spot-welder.

Case 3.—W. K., a male spot-welder aged 39. On Nov. 10, 1945, while spot-welding, a jet of sparks entered the pulp of

the left little finger and the dorsal surface of the terminal phalanx of the right ring-finger. Both wounds were fomented daily, and a week later pieces of metal were picked out with a needle from each wound. The little finger healed quickly thereafter, but the ring-finger discharged pus for ten days before healing. When seen in March, 1946, he complained only of a pricking sensation on pressure. There was no evidence of infection. A skiagram showed a spray of M.F.B.s in each of the affected fingers. As the patient considered his symptoms to be trivial he was not keen to submit to operation, and nothing further was done. He has continued to work as a spot-welder and is without disability.

Case 4.—A. M., a male welding charge-hand aged 36, on April 22, 1946, sustained a jet of sparks into the pulp of the terminal phalanx of the right index finger. Immediately it became very painful and swollen, and remained so for a few days, after which the condition settled down without treatment and without complications. After a week the small entry wound became hard and cornified. The resultant scar was lumpy and tender to pressure. There was no throbbing or pain. By May 29 the finger had become inflamed, swollen, and painful. At the site of injury there was a small black cornified spot with a surrounding yellow area and a slight sero-purulent exudation. A skiagram showed multiple M.F.B.s but no bone lesion. *Treatment.*—A lateral incision was made on May 31 and inspissated pus was evacuated from the superficial aspect of the wound and most of the M.F.B.s extracted with the aid of an electro-magnet. The wound was left unsutured. A post-operative skiagram showed that most of the M.F.B.s had been extracted. The wound healed quickly and well. He was still at work in his pre-accident job.

Case 5.—A. T., a male spot-welder aged 52. While spot-welding on May 30, 1946, he received a spurt of sparks from the machine into the pulp of his left index finger. He was seen within two hours of the accident. At the site of injury there was the erythema of a thermal burn with a few small black marks in its centre. A few hours later the finger became swollen and gave much pain overnight. Next day a small blister appeared at the wound site. A skiagram showed multiple M.F.B.s but no bone or joint involvement. A lateral incision was made and the pus drained from the blister, the main mass of underlying M.F.B.s extracted, and the wound left unsutured. A post-operative skiagram showed that only a few dust-like particles remained. He resumed work as a spot-welder two days later, and was without disability on Sept. 10.

Case 6.—G. S., a male spot-welder aged 25. On Aug. 13, 1946, he was welding parts of a motor chassis, using the spot-welding machine, when sparks penetrated his right thumb. He felt a sharp stab of pain, the site of the wound went white, and after a few hours the thumb was quite swollen. He did not attend the works hospital until next day. For three weeks the wound periodically healed and broke down again, with discharge of pus and metallic particles. The interphalangeal joint became progressively stiff and painful on movement. On examination on Sept. 3 there was a small hard lump consisting of a central black spot with a white halo and a peripheral area of erythema on the lateral aspect of the right thumb opposite the interphalangeal joint. In addition the marks of his trade were very apparent. There were two black spots on the flexor aspects of his right index and little fingers (Figs. 3 and 4).

FIG. 3.—Photograph of the hand of Case 6, showing a number of the relatively unimportant superficial burns commonly sustained by spot-welders. Also seen, on the thumb, is the wound of entry of M.F.B.s.

FIG. 4.—Enlargement of the thumb of Case 6, showing the wound of entry.

On the front of the wrist were fresh superficial burns, minute scars of old burns, and abrasions and linear scratches due to flying particles of steel. He had been welding steel sheets of extra thickness, and although his hands were relatively far away from the electrodes the spark output was heavier. Skiagrams (Figs. 5 and 6) showed numerous opaque foreign bodies close to but not in the interphalangeal joint. Flexion of the joint was limited to half its normal range. By means of an electro-magnet most of the metallic particles were extracted and the wound was left open for drainage. He resumed work as a spot-welder on Sept. 16, and on Nov. 12 was without disability.

FIG. 5.—Case 6: Skiagram showing the digital lesion.

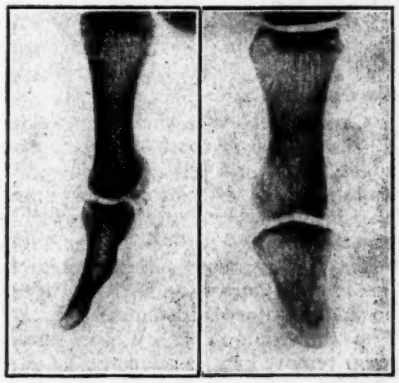

FIG. 6.—Skiagram of Case 6 taken after operation.

Case 7.—E. P., a male assembler and temporary spot-welder aged 38, received a spurt of sparks from the spot-welding machine into his left index finger on Aug. 13, 1946. He said the injury almost paralysed the finger. It was very painful and began to swell soon

afterwards. He reported to the works hospital two days after the event and kaolin poultices were applied. The wound healed quickly, but thereafter broke down every few days with discharge of pus. On examination on Sept. 13 a typical lesion was seen on the flexor aspect of the middle of the terminal phalanx of the left index finger. It was tender to pressure and dry. There was no joint or tendon involvement. A skiagram showed M.F.B.s in the pulp of the left index finger, but no bone or joint lesion. The metallic particles were excised, and he resumed work as a spot-welder on Sept. 13; when seen on Nov. 12 he had no disability.

Case 8.—R. S., a male, aged 56, while spot-welding small brackets on a machine on Aug. 27, 1946, and wearing cotton gloves, sustained a jet of sparks into the pulp of the left thumb. Inflammation, swelling, and pain resulted, and kaolin poultices were applied daily. On Sept. 3 two pieces of steel were removed from a pin-head abscess at the site of injury by probing only and without incision. On the 12th a dark, rough, cornified area appeared at the site of entry. There was no inflammation or oedema. Slight pricking on pressure was the only symptom, and this gave so little trouble that surgical intervention was unnecessary.

Case 9.—E. I., a female spot-welder aged 23. On Sept. 2, 1946, while welding small brackets on the spot-welding machine a splash of sparks entered her left index finger. No pain was felt at first, but some hours later the finger began to swell and throb. She reported for treatment next day. Kaolin poultices gave ease, but the wound discharged moisture for ten days before it healed. Examination on Sept. 13 showed a lesion situated on the flexor aspect of the left index finger over the distal interphalangeal crease: it was dry and tender to pressure. Joint movements were of full range, without tendon involvement. A skiagram showed M.F.B.s situated in soft tissue of the middle flexor aspect of the middle phalanx. No bone or joint was involved. The foreign bodies were excised, and next day she resumed work as a spot-welder. When seen on Nov. 12 she was without disability.

Case 10.—W. E., a male jig hand aged 27, sustained a splash of sparks into the lateral aspect of the terminal phalanx of the left ring-finger while spot-welding on Aug. 23, 1946. An *x*-ray film disclosed numerous M.F.B.s, but no bone lesion. The affected area was inflamed and tender and in the centre was a minute dark entry wound. An occlusive dressing was applied. On Aug. 30 there was still some inflammation but no pus and no oedema. On Sept. 9 the only disability was very slight pricking on pressure; but this is not often felt, as the lesion is situated laterally. Surgical intervention was not required.

Case 11.—A. P., a male aged 35, was using the spot-welding machine on Sept. 13, 1946, when sparks penetrated his left thumb; he reported this fact soon afterwards to the works hospital. Apart from the initial stab of pain the lesion did not cause discomfort, but the immediate vicinity of the entry wound became blanched and tense. At the radial side of the base of the left thumb there was a small collapsed blister with a surrounding area of erythema. At the centre could be seen a hard black core, from which exuded a pin-point of serum on pressure. A skiagram showed the presence of multiple M.F.B.s close to but not actually in the first metacarpo-phalangeal joint. Surgical treatment was carried out within six hours. The area of the lesion was completely excised and primary suture performed. Healing was by first intention, and he returned to his job on Sept. 23. When seen on Nov. 12 there was no disability.

Case 12.—N. S., a male spot-welder aged 35. On July 20, 1946, a splash of sparks from the machine penetrated his right index finger. He felt a burning sensation at the time of injury and had little discomfort afterwards. About four days later the finger began to throb and swell. He first came for treatment on Sept. 27, when the findings were as follows. Right index finger: raised pus-filled blister on the radial aspect of the interphalangeal joint. Joint movements were limited owing to inflammatory oedema surrounding the lesion. An *x*-ray film showed multiple metallic foreign bodies. The M.F.B.s were removed by excision the same day, and the opening was drained. The patient resumed work as a spot-welder on Oct. 5, and when seen on Nov. 12 was without disability.

Comment on the Cases

From the foregoing it will be seen that the lesion consists of a superficial burn, minute entrance wounds, and underlying foreign bodies. The red-hot sparks are sterile, but dirt and bacteria may be carried in from the skin surface. In addition the heat coagulates and devitalizes an area surrounding the particles, thus producing a field particularly prone to the onset of infection. The symptoms are primarily those of a burn and, later, those of retained foreign bodies with chronic inflammation. In our cases the metallic particles had lodged in the pulp and cellular tissues of the fingers, but if the more specialized anatomical structures—joint, nerve, tendon, bone—should be involved, a more serious outcome might be expected. Even in the form described above, in which the finger-pulp is affected, involvement of nerve fibrils in the finger-tips can lead to much tenderness and disability. These workers depend for their livelihood upon the exact and full function of their fingers, and if to pick up an object causes severe pricking pain they are seriously handicapped.

Treatment

First Aid.—This calls for a sterile occlusive dressing, a sling, the injection of antitetanus serum, and a sedative for the relief of pain. Preparation should then be made for the patient to receive surgical treatment.

Early Surgical Treatment.—If seen within eight to twelve hours of injury the procedure indicated is wound toilet, excision of dead tissue, extraction of metallic particles, and primary suture. The operation is carried out with all the usual theatre facilities. Either regional "novocain" block of the digital nerves or general anaesthesia is satisfactory, and a bloodless field is obtained by means of a rubber catheter tied round the proximal end of the finger. Incisions are placed laterally and enclose the wound of entry if possible. If the lesion is more centrally situated the incision is still made laterally and the entry wound excised separately. Although most of the metallic particles can be seen and removed by the point of the knife the procedure is facilitated by the use of an electro-magnet: the foreign bodies are magnetic, and even dust-like particles can be withdrawn. The operation is completed by the insufflation of penicillin powder and primary suture.

Late Surgical Treatment.—Cases which arrive for treatment later than twelve hours require immediate surgery only if infection is present. Even if no infection occurs, tenderness, irritation, lumpiness, or loss of fine sensation may be present, and these are indications for removal of the metallic foreign bodies. In certain cases, even in the absence of symptoms, excision is indicated, as the presence in the tissues of multiple M.F.B.s remains a source of danger. Chronic suppuration and sinus formation necessitate incision and drainage, with removal of the causative foreign bodies.

Prevention

It will be noted that all the above cases occurred in workers engaged in the use of a spot-welding "machine" as opposed to a "gun." The reason for this is that the process of welding small parts on a machine may entail the positioning of the part with the fingers close to the electrode as the weld is being made: the fingers are therefore exposed to the splash of sparks close to their origin and at their point of maximum velocity. In the case of a gun operator, on the other hand, the hands are both employed in holding the gun and operating the switch, and are therefore out of harm's way.

There are many technical causes of an increase in the amount of sparking produced in the process of welding.

Among these may be included foreign matter on the surface of the metal, inaccurate placing of the weld on the edge of the sheet of metal, maladjustment of the machine, etc. But even under ideal conditions sparking will occur in a certain number of cases. Such being the case, the problem of prevention is to devise a means of protecting the hands of the worker from these sparks. This might be achieved by one of three methods:

(*a*) By applying to the machine a guard which would protect the operator's hands or prevent them from being brought close enough to the welding point to be in danger. This would be the ideal method—being permanent and foolproof, and in no way demanding the co-operation of the worker. Unfortunately, no such guard yet conceived will permit of the welding machine being used.

(*b*) By the use of a jig for positioning the parts to be welded and thus removing the necessity for the operator's fingers to be close to the welding point. This is possible in many cases, but in some is technically impracticable. Also, in practice there is the very real danger that the operator will place ease before safety and discontinue the use of the jig.

(*c*) By the provision of tongs or protective gloves. This is analogous to the provision of goggles for the protection of the eyes, and possesses the same disadvantages—namely, that through laziness or carelessness on the part of individual operators they will be temporarily or permanently left off. As is well known by all industrial medical officers, protective clothing can easily be devised and provided, but it is most difficult to persuade operators constantly to use it.

It has been found that neither industrial cotton nor leather gloves afford sufficient protection, and we have experimented with various other materials. Those most satisfactory to date are cotton gloves coated with "neoprene" and asbestos fabric finger-stalls worn under the usual cotton gloves. We now have both of these in use, but are continuing our search for the ideal material.

We are grateful to Mr. J. C. Scott, Director of the Accident Service, Radcliffe Infirmary, for his help and encouragement in preparing this paper, and would like also to acknowledge the assistance given to us by the welding and laboratory staff of the Pressed Steel Company.

SYMMETRICAL GANGRENE IN THE AFRICAN

BY

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Gangrene in the extremities can generally be attributed to diabetes, arteriosclerosis, or thrombo-angiitis obliterans. Ergot poisoning is a relatively rare cause. Arteritis resulting in gangrene is described in acute infections, such as typhus and typhoid fevers and malaria. Gangrene has been noted in pellagra or the vitamin B deficiency state (Page, 1946). It is also seen in those cases where the arteries are suddenly occluded by an embolus, subacute infective endocarditis being a typical instance. Occasionally, in Raynaud's phenomenon, there are trophic changes in the tips of the fingers. Traumatic cases, forming a separate group, are also seen. Trench foot and the immersion-foot syndrome following exposure to cold constitute another class of cases in which gangrene of varying extent is the most important feature.

I have encountered gangrene in an extremity in the elderly African, presumably due to arteriosclerosis, and unilateral gangrene, which might have been attributed to syphilis. There appears to be very little written on Buerger's disease in the African. I have not encountered a case in the native. Ferro-Luzzi (1942) reports on 20 cases of Buerger's disease in European males living in Eritrea, but he failed to find the condition among the indigenous population. Goetz (personal communication), however, has seen a case in the African.

During the past four years I have seen six cases of symmetrical gangrene in the African, running a peculiar but nevertheless more or less constant course. In each the course and history were similar. (1) The onset occurred in a person who previously enjoyed more or less good health. (2) The disease was seen only in males. (3) It occurred usually between the ages of 20 and 35—one patient, however, was over 50. (4) The first sign was oedema of both feet; this was followed by pain. (5) The gangrene occurred simultaneously on each side. (6) No obvious cause common to each case could be found for the disease.

In four cases the gangrene was limited to the tips and pads of all the digits. In one the gangrene ascended to the mid-tarsal joints, being exactly symmetrical on both sides. In the sixth case the whole of both feet and up to 3 in. (7.6 cm.) above the ankle-joint on each leg was affected.

All the cases came from Mashonaland, but from widely separated regions. They were seen at different periods over the four years. In none was there anything to suggest that other cases with gangrene had occurred in the villages from where they originated. The patients denied having received any treatment from a witch-doctor or of having consumed any native drugs prior to the onset of the disease. They all stated that they had previously been well. In two of the six cases the Wassermann reaction was positive. In one of them the disease was immediately preceded by cerebral malaria, but in no other case was acute malaria found. No sugar was found in the urine of any of the patients. The blood pressure was normal in each. The clinical features of the two cases in which extensive gangrene occurred were as follows.

Case 1

An African man aged about 30 first became ill on June 11, 1945, with general malaise and shivering. He vomited twice on the first day of the illness. During the night he developed severe headache and passed into coma. He was admitted to the Salisbury Native Hospital from Norton (about 25 miles away) on June 14. The coma continued for two days, after which he gradually regained consciousness (June 15).

On admission the blood smears were positive for *Plasmodium falciparum*, and quinine was given by injection 10 gr. (0.65 g.) twice daily for two days. The cerebrospinal fluid was clear. There was nothing abnormal in his legs. On June 16, the day after his recovery from the comatose state and acute malarial condition, the patient first complained that his legs were heavy to lift. It was noticed that his feet, ankles, and the distal halves of his legs were swollen and showed pitting oedema, but there was no pain. A day or two later his legs and feet were very painful to touch. Several days later it was noticed that the skin of both feet was hard and cold up to 3 in. (7.6 cm.) above each ankle-joint. The feet were discoloured black, this being most clearly seen on the soles and the pads of the toes. Three distinct zones were noted on each limb. The most distal one, from the toe-tips to past the mid-tarsal joints, was pitch-black, due to total gangrene. The middle zone, which reached to about 3 in. above the ankle-joints, was cold and swollen. Above this was a narrow zone, which was warm and faded gradually into the normal temperature of the leg. All the toes were affected by dry gangrene. No pulse could be felt in the anterior and posterior tibial arteries, but that in the popliteal and femoral region was easily palpated and was of equal force in each limb.

The patient was thin. There was no oedema in any part of the body until it appeared in the legs. Jaundice was not detected. The conjunctivae were pale, as was the tongue. The gums were slightly spongy. There were signs of a pellagroid rash

on the hands and feet. Abdominal distension was not present, nor was the spleen or liver palpable. Nothing of note was found on examination of the central nervous system. The cardiovascular system was normal, the blood pressure being 110/80. The Wassermann reaction of the blood and cerebrospinal fluid was negative. No sugar or albumin was present in the urine. The blood count was: red cells, 2,570,000 per c.mm.; haemoglobin, 40%; colour index, 0.78; white cells, 24,500; neutrophils, 74%; lymphocytes, 22%; monocytes, 4%.

Before admission to hospital the patient's diet consisted of maize and meat—quite an ordinary one for an African. Life and food were shared with other labourers in a labour camp, and the patient stated that so far as he was aware none of the other inmates of the camp had been afflicted with his complaint.

The gangrenous areas were treated with dry sterile dressings. However, after ten days moist gangrene set in, and amputation was recommended. The infection spread and the gangrenous area became swollen and offensive, but the patient could not be persuaded to consent to an amputation. He insisted on leaving hospital and was discharged on July 13. Trace of him was then lost.

Case 2

A native youth aged about 16 was admitted to the Salisbury Native Hospital on July 1, 1945, complaining of swelling and pain in both feet. He came from the Enkeldoorn District (about 100 miles away). He was quite well until two weeks previously, when he began to have lumbo-sacral backache. There was no preceding history of malaise, vomiting, headache, consumption of drugs, or eating of food other than that to which he was accustomed. He had not previously visited a witch-doctor. A week after the onset of the backache he noticed that both his feet had begun to swell. The oedema was followed by pain in the feet. The patient was quite certain that the swelling preceded the pain by two days. A week later he noticed that both feet had changed colour, becoming darker and blacker. His diet on the whole was a fairly satisfactory one, consisting of maize daily, meat four times a week, pumpkin three times a day, sweet potatoes every day, monkey-nuts occasionally, and certain wild fruits. He ate worms, caterpillars, locusts of the larger type, and white ants.

On examination he was fairly well covered, with no sign of nutritional disease. The lungs were clear and the heart normal. The blood pressure was 120/60. The spleen and liver were not enlarged. The blood count was: red cells, 3,750,000; haemoglobin, 71%; colour index, 0.94; white cells, 11,300; neutrophils, 68%; lymphocytes, 21%; monocytes, 6%; eosinophils, 5%. The blood Wassermann reaction was positive.

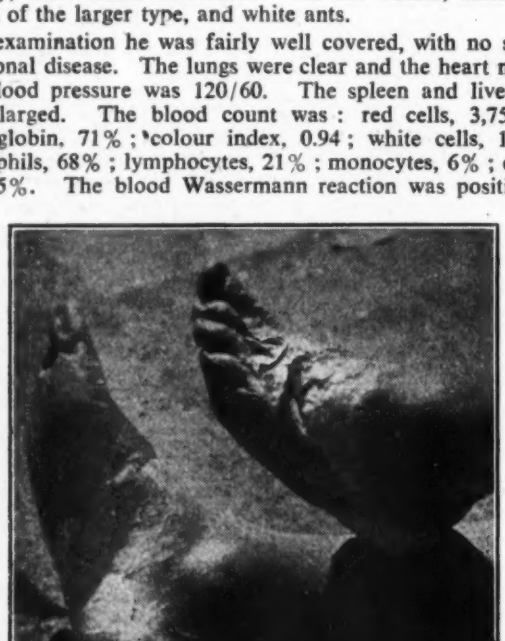

FIG. 1

There was dry gangrene of all the toes and both feet up to the tarso-metatarsal joints, the affected parts being black and cold. The gangrene was symmetrical in extent (Fig. 1). Immediately above the gangrenous area in each limb was a zone of demarcation, 1 in. (2.5 cm.) in depth, above which again was a band of hyperaemia which gradually faded into the normal temperature of the rest of the limb. The popliteal and femoral pulsations on each side were normal and equal. The dorsalis pedis and posterior tibial arteries could be felt pulsating.

Towards the beginning of August, spontaneous amputation was noticed at the line of demarcation in the left foot, and on Aug. 20 a similar line was seen in the right foot (Fig. 2). Next day the left foot was amputated at the line of demarcation

FIG. 2

in the tarso-metatarsal line, and on Sept. 7 the same operation was performed at the corresponding site in the right foot. The sites of amputation healed soundly and the patient was otherwise perfectly fit. He became anxious to leave hospital, was discharged, and returned to his kraal.

Discussion

The oedema is difficult to explain, since it is not usually a feature of arterial obstruction alone. Oedema in vascular disorders may usually be attributed to venous or lymphatic obstruction, local infection, or perhaps to disease of the capillary walls with resulting increased permeability. An example of the last type may be seen in Buerger's disease (Saint, 1945) or in ergot poisoning. It is possible that the oedema is the primary cause, producing secondary interference with the circulation of the limb, foot, or toes. The oedema appears rapidly in these cases and is of moderate degree. It may have been due to a thiamine deficiency. Case 1 was, in fact, given thiamine, 20 mg. daily, by intramuscular injection as soon as the oedema was noticed. It lasted only a few days and then disappeared, but by that time gangrene had supervened.

It will be seen that the primary cause of the admission of Case 1 to hospital was cerebral malaria, and that the limb disorder followed soon after. It would thus be reasonable to exclude ergot or other drugs which might possibly have been consumed before admission. The limb disorder may, however, be attributed to the severe malarial infection or to a spasm of the arteries in the legs following the administration of quinine.

From the above description it will at once be clear that Raynaud's disease and thrombo-angiitis obliterans are easily ruled out. Raynaud's phenomenon produces diffuse lesions, including small cutaneous trophic lesions with fibrosis in the fingers and toes (Saint, personal communication), but this occurs after a long interval and not, as in the cases described, after a single attack. Raynaud's disease confined to the toes is uncommon, whereas in the present cases the disorder was limited solely to the lower extremities. Thrombo-angiitis obliterans is easily excluded, for there is often a history of intermittent claudication when the muscle circulation is involved or of migratory phlebitis

It is almost always unilateral to begin with, becoming bilateral sooner or later. Almost all cases have a polycythaemia (Saint, personal communication). An anaemia was first seen in both my cases. The only two points which Buerger's disease has in common with these cases are that the patients were relatively young adults and were all males.

Ergot poisoning has to be considered. There is usually a history of the patient's having taken the drug, or of other cases occurring in the community. In the cases recorded, however, no other sufferers with gangrene were observed in the areas from which they came. In ergot poisoning, in addition to the gangrene, nervous symptoms may appear. In my cases, however, there were no neurological changes. In ergotism the gangrene may affect not only the toes but also the fingers, and is usually delayed for weeks. In my cases the onset was rapid and only the lower extremities were affected.

Exposure to excessive cold may result in gangrenous changes in the extremities. Abramson *et al.* (1946) describe illustrative cases with symmetrical gangrene of the toes and feet bearing a close similarity to the cases described in this paper. Trench foot is usually seen in those compelled to remain in trenches for a prolonged period during which the extremities are exposed to a damp and very cold environment. There was nothing, however, in the history of the present cases to attribute the gangrene to such a cause.

Lewis (1936) describes two interesting forms of symmetrical or bilateral gangrene which bear a great similarity to my cases. The first form is referred to as "bilateral gangrene of the digits in the young," and the second as "bilateral gangrene in the digits occurring in the elderly."

In the former group children and young adults are affected, both sexes equally. The origin of the condition is obscure. It usually affects relatively young people with no previous history of vascular disease. At the time of onset, however, malnutrition or some other condition causing chronic ill-health is present. It may, on the other hand, develop during an acute infection such as pneumonia or typhoid fever. The onset is apparently sudden, without warning, and several fingers or toes are affected. These become discoloured within a few days. Tissue at the tips of the toes is lost, the gangrene usually being dry. Occasionally it may extend to the base of the distal or middle phalanx. The disease is bilateral and often strictly symmetrical. The main arteries are unobstructed. Lewis considers that the condition probably results from damage to the intimal coats of the digital arteries, with resultant thrombosis. My cases appear to differ from these in that they had a preceding history of pain and oedema in the affected areas, and that in two of them the gangrene extended well beyond the toes, thus being more extensive than in the disorder described by Lewis; also, the fingers were unaffected. The similarity between his cases and mine lies in the fact that a single attack with symmetrical distribution occurred in those generally poorly nourished or in a patient during the course of or following an acute condition.

In the second group described by Lewis—bilateral gangrene of the digits in the elderly—an associated disease, such as cancer, tuberculosis, high blood pressure, or diabetes was present with the gangrenous disorder. The fingers often become discoloured without warning and gangrene soon follows. The gangrene is often associated with much pain. Lewis supposes that the vessels show intimal thickening, due to nutritional changes. This leads to multiple arterial obstruction.

It is not possible to give a cause for the cases I saw over the past four years. The exact symmetry of the affection would suggest a toxic disturbance or some general disorder such as a deficiency disorder. I doubt if ergot was the cause of the gangrene, since one of the cases was admitted with cerebral malaria, and developed the condition in hospital. Quinine, however, was administered to this patient and may have produced a spasm of the vessels.

Pellagra, ariboflavinosis, hypoproteinaemia, and other disorders of nutrition are common in the African. Case 1 showed signs of pellagra. It is possible that the gangrene may have resulted from vascular occlusion, a direct result of a nutritional disturbance in the vessel wall. This possibility is not altogether improbable in view of the reports on the development of gangrene in the extremities seen among prisoners of war in the Far East. Recently Page (1946) reported on the findings on 2,000 prisoners of war from Hong Kong. Among these a certain number with painful feet and signs of deficiency in the vitamin B complex developed gangrenous changes in the toes and feet. Page reports, too, that Prof. Kinoshita of Osaka University studied these vascular changes seen among Japanese soldiers returned from the South Pacific and found definite thickening of the vessel walls with narrowing or obliteration of the tissues of the small arteries of the feet and legs.

Summary

Six cases of gangrene of symmetrical distribution and extent occurring in the African are described. In four the gangrene was limited to the toes, but in two the gangrene was more extensive.

The condition sets in simultaneously on each side, first with oedema, followed by pain and finally gangrene.

My thanks are due to Prof. C. F. M. Saint for kindly examining the two cases described in detail and for his suggestions as to the differential diagnosis. I am grateful to Dr. R. M. Morris, Medical Director, Southern Rhodesia, for permission to publish this paper.

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Medical Memoranda

Acute Infectious Lymphocytosis

Steigman's (1946) account of infectious lymphocytosis has drawn attention to the importance of this condition in children, especially in the differential diagnosis of infectious lymphocytosis and acute leukaemia, and prompts me to report a case of the acute form, as very few have so far been recorded in this country. From a perusal of the literature infectious lymphocytosis would appear to be a disease of recent origin, though before Carl Smith recognized it as a separate disease entity in 1941 it was probably confused with infectious mononucleosis. No cases even suggestive of the condition seem to have been reported before 1939, and, indeed, only a handful of cases were to be found in the American literature, and apparently very few elsewhere, until Finucane and Philips (1944) described an epidemic of 21 cases in a children's sanatorium.

CASE REPORT

The patient, a boy aged 7, first attended the children's department of the London Hospital on Oct. 15, 1946, with a history of diarrhoea for five weeks. There was slight abdominal pain, he passed frequent motions containing a little mucus, and he complained of sweating at night. The only abnormality noted was moderate enlargement of the left cervical glands. Rectal swab and *x*-ray examination of the chest were negative. On Oct. 25 blood examination revealed a white cell count of 30,600 per c.mm. (75% normal small lymphocytes) and haemoglobin 85%. At the age of 4 he had had whooping-cough and two years later he developed mumps. An uncle had died of pulmonary tuberculosis when the boy was 1 year old, but there was no history of contact.

On admission for further investigation the boy felt perfectly well, the diarrhoea having ceased. He was thin and rather pale, and was afebrile; pulse 90. The tonsils were slightly enlarged, as were the glands of the left side of the neck, which were discrete and rubbery. The spleen and liver were not palpable. There were no symptoms or signs referable to the nervous system. No other abnormality was noted, except that on Nov. 7 the white cell count was 52,300 (76.5% small lymphocytes). The Wassermann reaction, Mantoux test, and Paul–Bunnell reaction were all negative.

By Nov. 20 the white cell count had dropped to 11,100 (51% small lymphocytes, 40% neutrophil polymorphs, and 3% eosinophils). He was then discharged to the out-patient department, and on Nov. 26 the white cells numbered 13,300 per c.mm. (lymphocytes 25%). He felt well and there were no abnormal signs.

COMMENT

This case is typical of infectious lymphocytosis, especially in the mild abdominal symptoms, the paucity of physical signs, the cervical adenitis, the leucocytosis with relative and absolute lymphocytosis due to increase in normal small lymphocytes, lasting three to five weeks, and the negative heterophile agglutination test. If the disease is due to a virus, as is to be supposed in the absence of a demonstrable bacterial agent, the blood changes are very unusual, since viral infections are characterized by leucopenia, the apparent lymphocytosis being only relative. As in the cases reported by Finucane and Philips a mild eosinophilia appeared as the total count fell.

I should like to thank Dr. Kenneth Tallerman for permission to report this case, which was under his care.

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Pseudo-Hypertrophic Muscular Dystrophy

The commonest type of muscular dystrophy seen in clinical practice is pseudo-hypertrophic muscular dystrophy, and its features are fairly constant. The following case is of interest because of the late onset of symptoms and the slow progress of the disease.

CASE REPORT

The patient, a man aged 68, was admitted to hospital complaining of difficulty in walking. At the time of admission he could walk only with the greatest difficulty, and the slightest obstruction to his progress caused him to lose his balance. The first symptoms appeared at the age of 28, when he experienced difficulty in climbing stairs. He was then employed as a locomotive fitter, an occupation involving a considerable amount of climbing on and off engines. The progress of the disease was so slow that he was able to continue at his employment until he retired at the age of 64.

Since his retirement, however, a rapid deterioration in his condition has taken place, until now, at the age of 68, he is almost completely crippled. He is an only son, but a maternal uncle had been similarly affected since childhood. The patient has two sons, aged 28 and 30, who so far show no signs of the disease.

Examination revealed the characteristic combination of muscular hypertrophy and wasting found in this condition. Pseudo-hypertrophy was present in the gastrocnemius, deltoid, and infraspinatus muscles. Wasting was evident in the supraspinati, pectoralis major, and biceps brachii, but there was no involvement of the masseter or of any of the other facial muscles. The pupils were central, circular, and equal, and reacted to light and accommodation. The cranial nerves were normal; the knee-jerks could not be elicited, but the ankle reflexes were present; and the plantar responses were flexor. There were no signs of disease in the cardiovascular, respiratory, or alimentary system. The Wassermann reaction was negative, and a glucose-tolerance test normal. Section of the pectoralis major showed an almost complete absence of muscle fibres with replacement by fat. Section of the gastrocnemius revealed swelling of the muscle fibres with proliferation of the sarcolemmous nuclei.

COMMENT

Pseudo-hypertrophic muscular dystrophy is said to have the least benign course of all the dystrophies, and generally shows a progressive deterioration. Death usually ensues in 10 to 15 years from secondary pulmonary complications following paralysis of the respiratory muscles. Most cases of this type of dystrophy start about the middle of the first decade. A precocious onset of symptoms is said to forebode a bad prognosis with a rapid deterioration, and, conversely, a late onset often indicates a more favourable course. In the present case the onset was delayed until the age of 28, and the course of the disease has so far extended over 40 years. Moreover, there seems to have been an arrest of progress during 36 years.

It is likely that, had the patient been seen 10 years ago, recovery might have been reported, and this is a possible explanation of some of the cases of cure which have been recorded in the literature. The rapid progress of the disease at the end is also an interesting feature of the case.

Most of the cases in which arrest of the disease has taken place have been examples of the Landouzy–Déjerine type or of the Erb juvenile type. Since the essential pathology of the dystrophies is the same, it is to be expected that a similar course would be followed by other types of dystrophy, and the case here described is a good example of the slow course and temporary arrest seen in the other types of muscular dystrophy.

I wish to thank Dr. H. H. MacWilliam, medical superintendent of Walton Hospital, for permission to publish this case.

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Empyema of Frontal Sinus simulating Osteomyelitis

In the following case the history and clinical signs resembled osteomyelitis of the frontal bone, and for that reason I submit it for publication.

CASE REPORT

Madame A, aged 50, was admitted to hospital complaining of a discharging sinus above the right eyelid for five months. There was no pain and the discharge was preceded by a swelling of the right upper lid for two weeks. She had had headaches over the right side of the forehead for one year. Six years previously she had had similar headaches and swelling of the right upper lid, but no discharge.

On examination a narrow sinus discharging yellow pus was observed immediately beneath the centre of the right eyebrow. *Staphylococcus aureus* was found on direct examination and culture. A probe was passed easily through the sinus, which proceeded above the superior orbital rim in the direction of the posterior ethmoidal cells for a distance of 2 in. (5 cm.) over the right frontal surface of the frontal bone. There was slight depression, oedema, and tenderness on pressure. Skiagrams showed what appeared to be an abnormally large right frontal sinus; the left frontal sinus was apparently absent. The right superior orbital margin was depressed about one-third of an inch (0.8 cm.), and marked widening and shortening of the right superior orbital fissure were found. There appeared to be a doubtful sequestrum at the medial margin of the sinus. A lateral view showed an abnormal depth to the sinus.

The frontal bone was approached through a Howarth incision opening the discharging sinus. The orbital rim and floor of the frontal sinus were intact but very thin. The pus was evacuated through the discharging sinus, and an empyema of the right frontal sinus was found occupying an oval cavity about 3½×2×2 in. (8.75×5×5 cm.), which had completely eroded the roof of the orbit to the level of the superior orbital fissure. The pulsation of the frontal lobe of the brain and meninges was clearly palpable through the mucous lining of the empyema. There was an erosion of the anterior wall of the sinus, and through this the sinus discharged.

The fronto-nasal duct was enlarged in routine Howarth fashion and the anterior ethmoidal cells were removed. A 1/2-in. (1.25-cm.) drainage-tube was inserted into the wound through the enlarged fronto-nasal duct to the nostril. A full course of sulphathiazole and 3,000,000 units of penicillin were given over a period of a week. Recovery was uneventful.

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At the Eighth Congress of Scientific Films held in Paris in October, 1946, the Institut de Cinématographie Scientifique, Paris, and the Scientific Film Association, London, and observers from UNESCO, Czechoslovakia, Poland, Sweden, and the U.S.A., agreed that it was necessary to establish an international scientific film association. After preparing a draft constitution, the British and French organizations have been meeting in Paris to complete arrangements for an inaugural congress, to which all countries are being invited. This will be held in Paris at the beginning of October, 1947. It is hoped that the proposed association will assist in the provision of a number of practical and urgently needed services.

Reviews

EDUCATION FOR MEDICINE

Medical Education and the Changing Order. By Raymond B. Allen, M.D., Ph.D. (Pp. 142. 8s. 6d.) New York: The Commonwealth Fund. London: Geoffrey Cumberlege (Oxford University Press). 1946.

The practice of medicine reflects the philosophy of its age. In this challenging monograph Dr. Raymond B. Allen, a medical educationalist of wide experience and now President of the University of Washington, surveys the problem of medical education in the post-war world. He necessarily poses more questions than he answers, for medical education is an experimental art. There is no science of medical pedagogy; curricula are never final. Only programmes of instruction based on the knowledge, experience, imagination, wisdom, and courage of individual teachers and taught in medical schools of high quality will achieve success. Since, as Santayana wrote, "Those who cannot remember the past are condemned to repeat it," Dr. Allen sketches first the historical development of medical education. For him, as for others, medical education begins with the child and does not end until the physician has retired from active practice. The study of medicine, he believes, should include that of life in all its aspects—physical, psychological, and social. The physician should be so trained that he is competent to apply new knowledge in any branch of human activity to healthy living and to the prevention and cure of disease; he should co-operate fully with all those agencies whose aim is the provision of adequate medical services for the people. Therefore the student, before entering a medical school, should be an informed and cultured person with a sound knowledge of men and the world. He should be well grounded in the natural and social sciences, the methods of science and the humanities; he should have "formed habits of study, industry, honesty, dependability, friendliness, decency, and courage which should endure throughout his life." (It might in passing be noted that the medical student in the United States enters his medical school at the age of 21–2 years, after a three- to four-year college course; in Britain the student usually begins his medical studies at the age of 18.)

Dr. Allen makes a plea for emphasis, in the early undergraduate period, on broad principles and general ideas and concepts, but even here illustrations should be chosen which have application in the clinical field. Students should at this stage be taught where to find detailed information on any special topic and how to use a library. He pleads forcibly that the responsibility of the schools is to teach an *integrated medical science* and not the separate disciplines of anatomy, physiology, pathology, etc., as such. To achieve this unified course a new type of "Faculty of Medicine" is envisaged in which should be vested the full and final responsibility for the undergraduate teaching programme. This faculty would specify what no committee has yet drafted in detail—namely, (1) the fields of knowledge to be covered, (2) the special skills to be acquired, and (3) the type of integration to be achieved. Heads of departments would ensure that their most gifted teachers were available to carry out the faculty's programme. Dr. Allen emphasizes that the student, in his clinical studies, must have a sense of continuity in the medical care of a patient in order to acquire a lasting knowledge of the natural history of disease, and experience in how patients, as well as doctors and nurses, strive with illness. He deprecates the "snapshot" impressions of large numbers of patients seen only occasionally which is encouraged by many methods of clinical instruction, and he rightly condemns the increasing tendency of clinicians, and hence of their students, to rely more and more in diagnosis on laboratory reports and less and less on clinical judgment based on the history, examination, behaviour, and social background of the patient. "It takes a man, not a machine, to understand a man." The physician must be a humanist if he is to fulfil his vocation.

The author commends the step towards independent responsibility for the welfare of patients which an internship affords and critically assesses its various types. He also makes many wise observations on other topics—examinations, postgraduate education, and research. Throughout the book he stresses that medicine is a social science serving humanity. It is not enough that doctors should know about disease; they must, as Alan Gregg writes, care about it. This is the orientation in medical education which Dr. Allen commends to his colleagues in American medical schools. It is one on which we in Britain would do well to ponder.

HENRY COHEN.

DICHROMATIC VISION

Retinal Structure and Colour Vision. A Restatement and an Hypothesis. By E. N. Willmer, Sc.D. (Pp. 232; illustrated. 21s.) Cambridge: The University Press. 1946.

After reading Mr. Willmer's book we could not help reflecting on those happy bygone days before the last war when, turning aside from the commonplace three-dimensional world, men grappled with Einstein, relativity, and the fourth dimension. Suppose at that time some writer such as H. G. Wells had brought out a novel about a two-dimensional universe, it would have aroused great interest. He might have described how some scientists who had devised an atomic rocket of great power travelled in it to a distant planet. They landed safely, and discovered to their amazement towns consisting of flat houses with flat gardens. Flat boys and girls, with their flat parents, were all moving about rather like amoebae in the narrow space between two plane sheets of glass.

The analogy will be obvious to those familiar with current opinion on the physiology of vision, for, losing confidence in the trichromatic theory of Thomas Young and following the lead of Prof. Granit, of Sweden, whose micro-electrode investigations on animals are well known, physiologists are examining tetrachromatic and even polychromatic theories for guidance. Now Mr. E. N. Willmer presents us with all the pros, and many of the cons, of a dichromatic theory. His thesis is interesting and stimulating, and a fitting record of his ingenuity and patience. The book is well written and attractively illustrated; the shades of colour in some of the plates are very pleasing.

H. HARTRIDGE.

BEFORE AND AFTER OPERATION

Preoperative and Postoperative Treatment. Edited by Lt.-Col. Robert L. Mason, M.C., A.U.S., and Harold A. Zintel, M.D. Second edition. (Pp. 584; illustrated. 35s.) Philadelphia and London: W. B. Saunders Company. 1946.

A post-war edition of this excellent vade-mecum for ward work is welcome. Considerably revised by Colonel Mason, the co-author, and his New England collaborators, the work reflects the best in American pre-operative and post-operative management. Much of the detail is beautiful in its precision—the directions for shaving the wound area, for example, could not be more meticulous—and no practising surgeon could read the book without profit and enjoyment.

The viewpoint is essentially American; while this adds value to such sections as those on water and salt loss, on alkalaemia, and on amino-acid feeding, some other sections suffer from their authors' inattention to foreign surgery. No Scandinavian work is considered and only one Canadian paper is quoted in connexion with heparin, and the chapter on post-operative pulmonary complications is similarly limited. The Australian methods of preparing the colon for excision are not mentioned, and of forty-one references in the section on blood transfusion only twelve, all American, are dated later than the beginning of the war. Indeed the whole subject of shock has been less diligently re-edited than other chapters; all the references in it are to pre-war work, and British contributions to the understanding of types of shock, irreversible shock, and the dangers of excessive transfusion have not yet displaced the older opinions about toxins and nervous mechanisms. Some of the authors trust too confidently in the work of the chemical laboratory—Maddock's formula for calculating the salt needs of a hypochloraemic patient from the plasma chloride, for example, may cause grave error, and the haematocrit determination, blood specific gravity, and plasma protein as criteria of

dehydration are notoriously liable to mislead unless their fallibility is recognized.

However, the defects of the book are inherent in its qualities. Not only is the biochemical basis of therapy and prophylaxis everywhere sound, but there is throughout a typically American insistence that no effort be spared to investigate the patient thoroughly, to apply every pre-operative detail that will benefit the patient at operation, and to be inspired with an unflagging care after operation for his comfort and safety.

IAN AIRD.

PELLAGRA IN P.O.W.s

Pellagra in the Oto-Neurology and Rhino-Laryngology. By Otto L. E. de Raadt, M.D. (Pp. 172. Fl. 5.90 (Dutch currency).) Leiden: Universitaire Pers Leiden. Available from N. V. Martinus Nijhoff, Lange Voorhout 9, The Hague.

This is an English edition of a thesis presented at Leiden University, presumably written originally in Dutch. Dr. de Raadt, an E.N.T. specialist, was one of a group of Dutch medical men confined in P.O.W. camps in the Dutch East Indies, and in this monograph he gives an interesting account of his findings based on the examination of 160 persons suffering from deficiency states in Bandoeng, Java.

Although the subjective complaints of vertigo, tinnitus, and auditory impairment are among the commonest symptoms of pellagra and have been recognized from early times, we do not remember having seen before a detailed description of the objective findings in these cases when submitted to routine tests. As the author remarks, "Strange is the absolute absence of any report of vertigo in pellagra in the oto-rhino-laryngological bibliography at the end of the thesis." He also discusses the ocular manifestations and other coincident symptoms, particularly those generally considered to be caused by hypo-riboflavinosis.

The following are some of the conditions that the author surveys: vestibular hyperexcitability for cold water; nystagmus; hearing loss of perceptive type; Eagleton's symptom; Bing's ocular cogwheel sign; tinnitus due to deficiency; abnormality in the form of the pupils; hypo- or achlorhydria; burning and pains in hands and feet; stomatitis, glossitis, and pharyngitis. Unfortunately in Java, as elsewhere in Japanese P.O.W. camps, satisfactory therapeutic tests could not be used, but it would appear likely that the deficiency responsible for the cases described by Dr. de Raadt was of riboflavine and other closely associated vitamins of the B_2 complex.

H. S. STANNUS.

Those who knew Sir GEORGE NEWMAN, debonair and versatile Chief Medical Officer of the Ministry of Health, only in that capacity will be surprised to find from *Quaker Profiles* that he has been a life-long devotee of the Quaker way of life. His beliefs are set out in a series of descriptions of eminent members of the Society of Friends, such as Fox the founder, Penny Hodgkin the historian, and the Rowntree family. There are incidental references to eminent Quaker doctors such as Lister and Jonathan Hutchinson. These "practical mystics" showed by their lives that that kind of mysticism is not incompatible with eminence in business, literature, and science. The chapter devoted to Joseph Rowntree shows him as a pioneer in the scientific treatment of social problems. The "Cardinal Tenets of Quakerism" are discussed at some length, and among these "the inner light" plays a prominent part. This mystical revelation, it seems to the reviewer, is really indescribable, though its reality to those who have experienced it cannot be doubted. The papers contained in the book (Bannisdale Press; 7s. 6d.) come mainly from *The Friends Quarterly Examiner*, of which Sir George Newman has been the honorary editor for over forty years. They are characterized by the clarity and grace which we have long been accustomed to associate with the author's work.

Prof. Abderhalden wrote a book about the general principles of nutrition during the first world war. *Die Grundlagen Unserer Ernaehrung und Unseres Stoffwechsels* (H. Huber, Bern: Swiss francs 8.50), which has passed through many editions, has been brought up to date. It has the merit that the importance of energy is not obscured in descriptions of new discoveries, and the author lays stress on the many stages through which food passes before it is actually used in the body. The account of the effects of deficiency of calories is scanty. He gives details of the technique of metabolism experiments.

BOOKS RECEIVED

[*Review is not precluded by notice here of books recently received*]

The 1946 Year Book of Obstetrics and Gynaecology. Edited by J. P. Greenhill, M.D., F.A.C.S. (Pp. 655. 21s.) London: H. K. Lewis. 1947.

Summarizes recent advances in obstetrics and gynaecology.

The Design of Experiments. By R. A. Fisher, Sc.D., F.R.S. 4th ed. (Pp. 237. 12s. 6d.) London: Oliver and Boyd. 1947.

This edition includes new material on orthogonal squares, on confounding with many factors, and on the fiducial limits of a ratio.

Genetics. By E. Altenburg. (Pp. 452. 16s.) London: Constable and Co. 1947.

An account of modern genetics for the student.

Penicillin Therapy. By John A. Kolmer, M.S., M.D., F.A.C.P. 2nd ed. (Pp. 339. $6.00.) New York and London: D. Appleton-Century Company. 1947.

This edition contains new chapters on streptomycin, tyrothricin, streptothricin, and other antibiotics.

Handbook of Neurological Examination and Case Recording. By D. Denny-Brown, M.D. (Pp. 107. 10s. 6d.) London: Geoffrey Cumberlege. 1946.

An introduction to neurological methods for students and house-men.

Textbook of Obstetrics. By Gilbert I. Strachan, M.D., F.R.C.P., F.R.C.S., F.R.C.O.G. (Pp. 731. 45s.) London: H. K. Lewis. 1947.

A textbook for students and practitioners.

The Chemical Constitution of Natural Fats. By T. P. Hilditch, D.Sc., F.R.S., F.R.I.C. 2nd ed. revised. (Pp. 554. 45s.) London: Chapman and Hall. 1947.

This edition includes new material on component acid data in land animal and vegetable fats, on component glycerides, and on individual fat acids.

Der Blutspender. By Dr. H. Willenegger and Dr. R. Boitel. (Pp. 197. 10 Swiss francs.) Basle: Benno Schwabe. 1947.

The technique of blood transfusion, with reference to its use in the recent war.

Harvey Cushing: A Biography. By John F. Fulton. (Pp. 754. 30s.) Oxford: Blackwell Scientific Publications. 1946.

A biography for the student and general reader, with many photographs.

British Standards Institution Yearbook 1946. (Pp. 296. 2s. post free.) London: British Standards Institution. 1946.

Lists British Standards in numerical order, with a subject index.

Surgical Treatment of the Nervous System. Edited by F. W. Bancroft, A.B., M.D., F.A.C.S., and Cobb Pilcher, M.D., F.A.C.S. (Pp. 534. £5 10s.) London: J. B. Lippincott. 1946.

An illustrated textbook of neurosurgery for the neuro- and general surgeon.

A Laboratory Manual of Vertebrate Embryology. By F. B. Adamstone, Ph.D., and Waldo Shumway, Ph.D. 2nd ed. (Pp. 96. 12s.) London: Chapman and Hall. 1947.

Summarized information on the embryology of the frog, chick, and pig.

The Diagnosis of the Acute Abdomen in Rhyme. By Zeta. (Pp. 88. 5s. 6d.) London: H. K. Lewis. 1947.

Abdominal catastrophes recounted in verse.

Nutritional and Vitamin Therapy in General Practice. By Edgar S. Gordon, M.D., Ph.D., 3rd ed. (Pp. 410. 27s. 6d.) London: H. K. Lewis. 1947.

An account of vitamins and nutrients for the general practitioner.

Henry Sewall: Physiologist and Physician. By Gerald B. Webb and Desmond Powell. (Pp. 190. 16s.) London: Geoffrey Cumberlege, Oxford University Press. 1946.

A biography, with photographs, of the American physician.

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DISCUSSIONS WITH THE MINISTER

The Prime Minister announced in the House of Commons on June 9 that the Appointed Day under the National Health Service Act would be July 5 and not April 1, 1948. This will allow another three months for the setting up of the central, regional, and local machinery necessary for the operation of the new Health Service. It will also allow more time for the important discussions which are taking place between the Ministry of Health and the Negotiating Committee. This Committee, which could not be more widely representative, has undertaken a responsible task. Soon it will be in a position to put before the profession a statement of the way in which that task has been discharged. No news is not always good news, and in recent weeks some of our correspondents have taken as bad news the lack of any detailed statement about the progress of these discussions. Many doctors are worried about practices they have bought recently or practices they propose to buy. Assistants are not clear about their future prospects, and some of the recently demobilized medical men are at a loss as to their next step. An interim report in general terms may perhaps allay some of the anxiety felt by those readers whose letters we have published, and by many others whose inquiries and communications have not been intended for publication.

The National Health Service Bill, which first saw the light of day on March 19, received the Royal Assent[1] on Nov. 6, 1946. There followed a great deal of vigorous controversy which culminated in a meeting of the Negotiating Committee on Feb. 7. The Committee was then informed that the Minister of Health would like to enter on discussions and that he had accepted the conditions of the Negotiating Committee—namely, that such discussions should be comprehensive in their scope and should not exclude the possibility of further legislation.[2] Discussions began almost immediately and have proceeded throughout on this comprehensive basis. The same conditions have been accepted so far as Scotland is concerned by the Secretary of State, and discussions on the National Health Service (Scotland) Act, which received the Royal Assent barely a month ago,[3] have now begun.

Details were published in the *Supplement* (March 15, p. 27) of six subcommittees set up by the Negotiating Committee. These subcommittees are concerned with general practice, hospital and specialist services, public health, mental health, ophthalmic services, and superannuation. Each subcommittee has been actively engaged in parallel discussions with the Ministry. Each has impressed upon the officers of the Ministry, by explanation and argument, the points of policy laid down by the Negotiating Committee. In some cases discussions have been completed, but other subcommittees, and notably the General Practice Subcommittee, are still hard at work. No precise details can be given, for obvious reasons. It is anticipated, however, that sufficient progress will have been made for each subcommittee to report back to the Negotiating Committee at a meeting to be held before the autumn. These reports will have to be considered carefully and as interlocking parts of a full and comprehensive scheme. It is probable that the Negotiating Committee will then seek a meeting or meetings with the Minister in order to press upon him all aspects of the considered views of the Committee, advised and instructed as it has been by all its constituent bodies. The next step will then be for the Minister to reply to these representations.

So far the details of the exchanges will have been confidential. It is inevitable that this should be so. At this point, however, discussions should have reached the stage at which the full story can be told to the whole profession. A summary of the representations made by the Negotiating Committee, together with the Minister's reply, will then be published. It will then fall to each individual member of the profession to exercise that judgment which must precede action. Local and central discussions and meetings and a plebiscite will provide the familiar democratic machinery for decision. The whole profession will decide by these means its future course of action. It is still not possible to lay down a time-table for these events. Two assurances can be given, however. Discussions have been completely comprehensive, and all along representations have been made with vigour, clarity, and determination. Discussions will soon be completed, and when they are the report made by the Negotiating Committee to the profession will be full and explicit.

[1] *British Medical Journal*, 1946, **2**, 756.
[2] Ibid., 1947, **1**, 258.
[3] Ibid., 1947, **1**, 790.

WHITHER INDUSTRIAL MEDICINE?

After 1918 industry discarded its medical services. These were mainly in Government ordnance and filling factories which eventually closed as the need for munitions diminished. Industrial medicine was then limited to a study of occupational disease and first-aid requirements in factories.[1] The amount of money spent on industrial health research was negligible, and no university provided teaching or any other facilities in the subject. Between the wars the number of factories with a medical service slowly increased, standards were set, and interest was stimulated. But not until 1940 had medicine in industry a real opportunity to develop, an opportunity which arose as a direct result of legislation introduced by Mr. Ernest Bevin, then Minister of Labour.

It is now nearly two years since the second world war ended, but so far there is no sign of any appreciable decline in industrial health services. Everything points, indeed, to a further extension. Large firms are retaining their doctors, nurses, and dentists, and some of them are expanding their services. Certain new post-war organizations, such as B.O.A.C. and the Coal Board, have included

[1] *Annual Reports of the Chief Inspector of Factories.* 1919 and 1920.

medical services in their planning from the beginning. Group experiments such as that sponsored by the Nuffield Foundation on the Slough Trading Estate are arousing widespread interest. The Ministry of Supply has formed a permanent medical service. Some universities have set up departments of occupational health and have appointed professors and lecturers. The amount of money spent on industrial health research by the Medical Research Council increases each year; no fewer than eight separate units now work mainly in this field, and new committees dealing with the subject have been created.[2] Recent legislation, notably the Disabled Persons (Employment) Act, 1944, and the National Insurance (Industrial Injuries) Act of 1946, will ensure for industrial medicine a permanent place in the health services of the country. The effect of the Industrial Injuries Act was discussed in these columns a few weeks ago.[3] In addition the importance of industrial health services is now more widely recognized by the layman. A useful report from the jute industry[4] was compiled by employers and employees in conference with Government officials. This committee's recommendations range over a wide variety of subjects but include the firm view that "every jute factory should be under the supervision of a medical officer" and that "a comprehensive scheme of medical supervision covering the whole industry should be developed." Working parties in other industries might profitably devote attention to similar points.

We publish in this issue at page 838 the inaugural address by R. C. Browne, who was recently appointed to the chair of industrial health at Durham University. He emphasizes that until recently "industrial health" meant merely "industrial toxicology." Now a broader view is being taken. Over the past thirty years there has been a great increase in research by committees, sometimes sitting at a distance from the problem under review. Industrial health research at the start of the recent war was largely a repetition of former work or was designed to re-emphasize principles already known. As Browne says, "We observed the melancholy but understandable spectacle in 1940 and 1941 of industry attempting to run in almost complete ignorance of what had already been discovered in the previous war." However, the needs of the armed Forces for up-to-date knowledge of the effects of modern mechanization on the individual fighting man had an important influence. These needs were well satisfied by groups of workers, and Service experience during the war was in many ways in advance of present civilian practice.

There are three main ways in which industrial medicine could expand: by extension of the present system; by the creation of a whole-time national industrial health service; and by a compromise between these two methods. Extension of the present arrangements, even aided by legislation, is open to criticism. The system is inadequate, because it is limited to the larger and more enlightened industrial concerns, most of them factories, and little concerned with other occupational groups. It is haphazard, because of widely differing standards of service, both administrative and technical. The methods of appointing industrial medical officers, particularly those in a part-time capacity, are open to abuse. It is also true to say that a number of employers still tend to give the minimum of co-operation. The costs of the service are met entirely by the employer at present, and it has been said, mainly by those with little day-to-day contact with men at work, that the industrial medical officer is therefore biased in his decisions. Evidence of this is hard to find.

The creation of a whole-time State industrial health service, perhaps good in theory, might provide an apparently easy answer. Difficult problems to decide—problems differing widely from those now arising in connexion with the new National Health Service—would be the method of finance; methods of control and by which Ministry; sources and recruitment of medical man-power, and, particularly, the place of the general practitioner in the service; the extent to which there should be technical direction and supervision of the doctor; conditions of entry into the service; educational facilities generally; and the more abstract but nevertheless fundamental problem of loyalty. How effective can a doctor be, as an instrument for promoting good relationships in a given group, if he has a major loyalty to Whitehall or to a regional committee? Other criticisms of a State service, already well aired in our columns, would no doubt also apply; of these the fear of red tape and of bureaucratic remote control would be outstanding. A recent report by the Royal College of Physicians of London[5] advocates a national health service for industry, but only broad principles are stated.

"An Industrial Health Service should be planned in a bold manner without much regard for traditional arrangements. . . . Legislation should provide for the needs of smaller industries and non-industrial undertakings. . . . The service should be an essential part of the National Health Service. . . . The Chief Medical Officer of the Ministry of Health should be the Chief Medical Officer of the Industrial Health Service. . . . There should be uniform conditions of service, rates of remuneration, and pensions. . . . The service should be organized on a regional basis. . . . Whole-time industrial health officers should be appointed for the larger industries, and in suitable cases there should be a combination of full-time and part-time service. . . . But general practitioners will be the main body of the industrial health service. . . . There would be obvious difficulties if they were employed by two separate Government Departments."

The third way in which progress can be made is by a compromise between the two schemes, so that the best features of each could be retained. By common consent the present standards of industrial health practice should be improved and extended. It is doubtful whether industry, as at present constituted, would care to be saddled with yet another control—possibly of an inspectorate within its own gates. But it is ready to accept the principles of health supervision at work, and the workers themselves on many occasions have insisted on this, as recent pronouncements by miners and dockers show. The scheme should be comprehensive in that the needs of 18,000,000 employed people should, after study, be catered for. The need for careful planning is no less important than with a State service. One overall directorate might not be an advantage at this stage, but co-ordination is necessary. The whole-time industrial medical officer should conform to high

[2] Committees on Occupational Medicine, Occupational Psychology, Occupational Physiology, and on Industrial Pulmonary Diseases.
[3] *British Medical Journal*, 1947, 1, 685.
[4] *Final Report of Jute Industry Factory Advisory Committee*, 1946. H.M.S.O.
[5] Report on Industrial Medicine. R.C.P. Lond. *Brit. J. industr. Med.*, 1945, 2, 51.

professional and technical standards and be acknowledged as a specialist. A small number of consultants should be available in the regions with both high medical qualifications and long experience. Whole-time specialists in industrial medicine might be encouraged to develop group practice. The part-time medical officer, who will usually be a general practitioner, should satisfy certain basic standards before entry into the service; educational facilities should be provided by the universities to this end. The need for further professional links with regional committees should be explored. Any success that the industrial doctor may have had is largely because he has been accepted as part of the management. Both employer and employee then agree that his service is an integral part of the industrial system. The doctor obtains the confidence of all parties; he acts largely, and wisely so, in an advisory capacity; and his freedoms become those of any other independent medical man. It has been stated[6] that whether industry is publicly or privately owned its directors must be appointed by and answerable to the owners and not to the workers. This same principle should also apply to the medical advisers to industry.

The future development of industrial medicine depends for success on the technical skill of its practitioners. The saving of working time by competent nursing and casualty services is one obvious contribution, as is straightforward advice on health matters in collaboration with general practitioners and hospitals. The ancillary services, providing advice and treatment on dental, ophthalmic, and more recently ear and throat conditions, have also proved their worth; their expansion to cover the smaller working units and groups might be developed in collaboration with the new regional hospital boards. But these matters are largely concerned with curative medicine. The industrial health officer must go further into the fields of prevention, medical sociology, and the promotion of health. He must forge close links with personnel officers, industrial psychologists, and others. In this way he can make a positive contribution to the economic well-being of the group. Questions associated with toxicology and hazard control—for example, the health problems arising out of atomic and supersonic developments—require the close co-operation of the engineer and the physicist, and will always arise with new advances in science. The study of the incidence of injury in different occupational groups and in varying accident situations requires help from statisticians, if the information thus obtained is to be exploited fully in the wide field of accident prevention. Industrial contributions to rehabilitation, including the placement of handicapped persons and methods of linking hospitals more closely with industry on lines similar to those suggested by R. C. Browne, require close attention. Methods of matching the man to the job and so placing individuals in occupations for which they are physically and mentally suited involves co-operation with personnel officers, works managers, and engineers, as well as with medical practitioners and hospitals; techniques of job description and job analysis have still to be developed and may well provide another valuable tool for the industrial physician. Finally, there is the continuing health supervision of juveniles entering employment. Apprenticeship schemes have done much to provide vocational supervision. There is an equal need for the health supervision of the school to be continued into employment. To be successful this supervision must define health in its widest sense and include a close study of the social, economic, and even moral issues that so frequently arise. In this field alone industrial medicine could make a significant contribution to positive health.

[6] *The Times*, May 20, 1947.

SPRAY-DRIED EGG AND FOOD-POISONING

The relationship between eggs and salmonella food-poisoning has been discussed before in these columns,[1 2] but it was not possible to give the full story because the facts from the English side were not available. Only a few experts dealing with the problem were aware that the extensive introduction of dried egg powder was followed by a great increase in outbreaks of salmonella food-poisoning; no information was given to the general public or indeed to the medical profession. Now the Medical Research Council has issued a special report on the subject,[3] which includes details of a number of investigations by various bacteriologists. Two of the four reports are concerned with the bacteriology of dried egg and salmonella infections in man associated with the consumption of dried egg. The predominant bacteria in dried egg are enterococci and aerobic-sporing anaerobes; coliform organisms are present in every sample but only in small numbers. The significant finding is that in 754 or 9.9% of 7,584 samples examined, organisms of the *Salmonella* group were isolated. Since the media used were not suitable for their growth this excludes the comparatively harmless *Salm. pullorum* and *gallinarum* types, which one would expect to find as their relationship to fowl diseases is well known. This high proportion of positive findings varied with the country of origin, being in dried egg from U.S.A. 11.1%, from Canada 4.1%, and from the Argentine 10.5%. While 33 different *Salmonella* types were isolated, 6 types were most frequently seen, all of them new strains not previously found in this country or associated with salmonella disease. These new strains are: *Salm. oranienburg*, isolated 245 times; *Salm. montevideo*, 139; *Salm. meleagridis*, 117; *Salm. tennessee*, 90; *Salm. bareilly*, 82; and *Salm. anatum*, 30 times. The most common food-poisoning strain, *Salm. typhi-murium*, was also isolated from 30 samples.

The report on salmonella outbreaks in man shows clearly that the extensive retail distribution of dried egg coincided with a marked rise in outbreaks of salmonella food-poisoning. In 1944, for example, there were 454 such outbreaks reported, a figure higher than the total for the whole of the seventeen previous years. As the authors of the report point out, this indicates some new source of infection, and the facts suggest that dried egg powder is this new source. This suggestion probably received the strongest confirmation when the *Salmonella* strains from these outbreaks were typed. There were 10 new types in

[1] *British Medical Journal*, 1946, **2**, 583.
[2] Ibid. 1947, **1**, 456.
[3] *The Bacteriology of Spray-dried Egg with particular reference to Food-poisoning*. By various authors. M.R.C. Special Report Series No. 260, 1947. London; H.M.S.O., 1s.

1942, 8 more in 1943, and another 6 in 1944. Of these new types the six commonest in order of frequency were precisely the six already mentioned as those most often isolated from dried egg. Complete proof that dried egg is the vehicle would require demonstration of its connexion with each outbreak notified. Owing to war conditions and other influences this was possible only in a few outbreaks; but in a number the connexion was established, and in the present report four such outbreaks are detailed. These new strains gave rise to much the same clinical features as the older long-recognized types.

The general public is mainly concerned with the vexations of rationing. The medical profession has to consider the possible effects of new foods and new food habits in relation to illness. Dried egg is a comparatively new food, and communal feeding is a comparatively new habit. The increasing use of British restaurants, school and factory canteens, and the like carries with it greater risks than previously of a considerable spread of infection from contaminated food. Much more attention has been paid to this problem in America, and investigators there have standardized bacteriological methods of assessing the efficiency of utensil-cleansing; have laid down the factors essential to an acceptable standard of sterilization; and have prescribed sound methods for the elimination of infected food-handlers. In this country we lag far behind. Little work has been done on this subject, and the illuminating paper by Hutchinson[4] described one of the very few investigations made in Great Britain. It disclosed many unsatisfactory features which would not be tolerated in the U.S.A. and it emphasizes the need for further investigation and for the setting up, for general guidance, of standards of cleanliness and sterilization. Communal feeding has probably come to stay, and an authoritative committee to advise as to standards, technique, and other matters is an urgent need.

The introduction of foods such as dried egg and dehydrated vegetables should also be studied in relation to the spread of pathogenic organisms. Clearly the risk of food-poisoning from dried egg is a real one. An important part of efficient public health administration is to weigh up potential risks against known advantages, and it is not sound administration to reject a method merely because it involves a small risk. This administrative problem is faced fairly in a short appendix to the recent report contributed by the Ministry of Food. The Ministry makes out a strong case on the nutritive and economic sides for the importation of dried egg. It admits the infective risk but claims that it is a small one. Between 1942 and 1945 the Ministry imported 244,000 tons of dried egg and argues that against this quantity the ascertained cases of food-poisoning do not loom large. It goes further and discusses what can be done to reduce the risk. A specification that *Salmonella* group organisms must not be present was found impracticable. Experiments were then made on the effect of cooking, and the results are set out in the body of the report. "Numerous experiments showed that scrambled egg and omelette prepared from freshly reconstituted dried egg were free from demonstrable living salmonellae, but that if the reconstituted egg was incubated for some hours so as to allow bacterial multiplication cooking could not be relied upon to kill all salmonellae present." Advice on the need to cook as soon after reconstitution as possible is set out on, for example, all leaflets to caterers. However, the statement quoted on the effects of heat treatment hardly justifies the light-hearted pronouncement: "It may be concluded that if dried egg is *effectively* cooked immediately after reconstitution the risk of salmonella infection therefore does not arise." The risk exists and the Ministry of Food is probably right to take it, but it would be better to recognize its existence and point out that it can be minimized by suitable methods of cooking. The short introduction by the late Dr. R. B. Haines and Prof. G. S. Wilson gives clearly the scientific basis on which the use of dried egg was continued after the risk was known, but it does not seek to imply that all risk can be removed. One method of prevention which does not appear to be mentioned in the report is by improvements designed to exclude *Salmonella* organisms at the places of production and drying. No doubt this was considered outside the scope of the report, but it is a promising line and already a good deal is being done, for example, by the exclusion of dirty eggs.

[4] *British Medical Journal*, 1947, 1, 134.

MEDICAL SERVICES IN DENMARK

We begin this week the publication of a short series of articles on the medical services of Denmark. Dr. Gerald Evans (*Supplement*, p. 119) records an Englishman's impressions gained during a recent visit to Copenhagen. He will be followed in later issues by Danish physicians describing the conditions of general practice, the hospital system, the public health service, educational facilities, and the State Serum Institute—this last an organization whose fame as a scientific institution, a central epidemiological research laboratory, a diagnostic service, and a factory for the production of sera and vaccines has gone far beyond the confines of Denmark.

The Scandinavian countries have much to teach the rest of the world in the various fields of social welfare. They are in advance of most other European countries in education, sex equality, co-operative enterprise, infant and maternal welfare, public health, and social progress generally. They are of course small countries, in which social experiment is easier than among vast populations with a varied industrial pattern. The population of Denmark is less than that of the county of London, and, apart from Copenhagen, only one town has many more than 50,000 inhabitants. Among a well-organized people, roughly half-rural and half-urban, the conditions seem to be almost ideal for social advance. Moreover it is important to remember that the Danes are a well-educated people. The fact that education is a necessary basis for national health measures is not always appreciated. Denmark, which had compulsory education, at least on paper, two hundred years ago, is in the vanguard of Scandinavian countries in the development of adult education. Its residential high schools for people up to 25 receive State subsidies but have perfect freedom and an undictated curriculum, and they are not predominantly vocational. By these and other means, including progressive and co-operative movements, the Danes have acquired a strong community sense, have learned the advantage of working together, and have come to understand what co-operation requires of the individual.

If our own National Health Service is to be a success the people must understand it, its need and value, its means and aims. Without such an understanding regulations and disciplines will count for little—something to be evaded rather than the leading strings to a healthier society. It is no less true for its patients than for its doctors that a National Health Service must be accepted rather than imposed, and we may regret that our Government, so energetic in legislation, while it has prepared a Service for the people, has devoted little attention to preparing the people for the Service. Many still believe that the service is a system of "free doctoring" and free everything else to do with health. They should be told that its success will depend largely on their own understanding and proper use of it, and also that it is not "free" but that the whole community is footing the bill.

The National Health Service in Denmark is a very different organization from the new British scheme. It was founded in 1909 and reorganized and adapted to the latest public health developments in 1932. Its functions are advisory, supervisory, and administrative. In one respect it resembles the General Medical Council, for it authorizes both general practitioners and specialists to practise their profession, but it also advises local public health authorities and the public generally in all medical matters, and supervises public health, nursing, and hospitals. The provision of hospitals for the people as a social task was laid down by ordinance as long ago as 1806. The onus of providing such hospitals was laid not on the State but on local authorities. The result is that Denmark now has a uniform and efficient hospital system, with hospital treatment available to any person who needs it, irrespective of means or social position. Nine out of ten hospitals belong to the county or city communes, and these municipal or county hospitals, as we should call them, have gained the regard of the people in the same way as the voluntary hospitals of this country. Perhaps it is because the municipal hospital is a recent growth in Great Britain, and some recollection of the old Poor Law Infirmary still remains, that these hospitals, in spite of the excellence of many of them, have not yet evoked the same pride and affection, for the feeling of a community towards its hospital may not depend on the mode of financial provision for its maintenance. It is, or it should be, the people's own hospital, whether it is supported by the rates or by their voluntary contributions.

The medical profession of Denmark remains a free profession. The doctors have not been turned into Civil Servants; they have not even adopted a system of group practices or health centres, though Dr. Evans describes the arrangement whereby people unfortunate enough to be taken ill after 8 p.m. may have a strange doctor to attend them. The only respect in which the Health Service seems to act compulsively towards doctors is in requiring them to send any notifications or reports which it considers necessary. The Danes have endeavoured to maintain the family doctor principle—that is, each family has its regular doctor, one who knows not only the constitution and history of each individual in the family but his domestic and economic background. That principle is imperilled not so much by legislation as by the increasing specialization of medicine. In Denmark the sickness benefit club service, which for over half a century has been providing free medical care by practitioners, was planned from the start as a family system, including children under 15, and was not restricted to wage earners. It is to the general practitioner that the first application for medical attendance is made, and through him the specialist is consulted and admission to hospital arranged. There is organized collaboration between general practitioners and hospitals, specialists, and laboratories. It is said that the system is working well and there is no disposition to change it. In the hospitals—more so outside Copenhagen than within it—discussions and conferences take place between the hospital staff and local practitioners, and the latter receive reports on their discharged cases.

The Danes have succeeded in maintaining a system of individual medical practice, free from political pressure and interference by lay authority. The family doctor system is being carried out more consistently in Denmark than in any other country, although specialist medicine is of a high order. The family doctor system may not satisfy the departmental mind, may not be liked by those who tend to think of human beings in terms of statistics or of mere numbers, but it does represent the most human approach and the most effective approach in medical practice.

SCANDINAVIAN POLYCLINICS

In June, 1946, Danish, Norwegian, and Swedish representatives met in Copenhagen. A long report on this meeting[1] devotes much space to a discussion on the evolution of medical practice in health centres run as polyclinics.

Polyclinics are operated in the larger towns in Sweden and at the Universities of Uppsala and Lund. The largest polyclinics are directly linked with the hospitals, whereas some of the smaller polyclinics are in this respect independent units. The former are usually staffed by the junior members of the hospital service, whereas the latter are in most cases in the charge of a specialist who gives part-time service. Originally intended only for the poor, Swedish polyclinics have come to be patronized more and more by the well-to-do who, in return for an increasingly elaborate service, pay fees for each attendance and a supplementary fee for radiological examinations and the like. A report from the surgical side of the Sahlgrenska Hospital shows that the average daily attendance at its polyclinic, staffed by two doctors, was 216, the record being 325 attendances in one day. In the course of four hours a day, these two doctors attended patients at the rate of 2.2 minutes per patient. The work included suture of recent wounds, dental extractions, applications of plaster-of-Paris, removal of small tumours, injections, aspirations, scrutiny of skiagrams, writing prescriptions and directions for special examinations, and communicating by letter or by telephone with other doctors, with patients, and with their relatives. Though the rhythm of this particular polyclinic may have been exceptionally hectic, it is illustrative of a very definite trend.

It was hoped that polyclinics would ease the pressure on hospital beds, but experience has shown that the hard-worked polyclinic doctor, when confronted by an obscure case or one requiring much examination, is apt to send many of his patients to hospital, whereas a general practitioner has more time in which to keep his patients under observation at home. One of the Swedish delegates deplored the tendency on the part of the public at the present time to undervalue the human element provided by the individual doctor practising medicine as an art, and to overvalue the technical side of medicine. Formerly the patient with a cold in his head went to bed with a bottle of brandy beside him. Now he hies himself to a crowded waiting-room at the polyclinic where he broadcasts his infection. On the other hand, a recent statistical analysis in Stockholm has shown that attendances on individual doctors, including private practitioners, greatly outnumber attendances at polyclinics.

[1] *Nord. Med.* 1946, **32**, 2901.

A PATIENT'S EXPERIENCE OF E.C.T.

[From a Correspondent]

In view of Dr. D. W. Winnicott's emphasis on the need for further study of patients' own reactions to physical therapy of mental disorder (*Journal*, May 17, p. 688), some account of the experience of a patient may be of interest. I am a writer by trade. My symptoms were, I understand, those of a mild depressive illness. I felt frustrated in the extreme, brooded over past events, was at times deeply depressed for periods of as long as two days at a time, and was liable to great irritability which I kept under control except in so far as it sometimes broke out in speech, accompanied by aggressive and exaggerated negativism in argument. That this condition had developed from a deep-seated origin was indicated by the fact that I had stammered rather badly from infancy—i.e., over 45 years. In general, I found great difficulty in thinking and working on the ordinary superficial level usual in most occupations, while lacking the specialized training which might have enabled me to direct my tendency to deeper thinking into some canalized and thus fruitful employment. This must be a common difficulty of the type of mind so well described by C. E. Montague—a mind which has "a proneness to revel and bask in its own sense of fact." The mildest depression greatly accentuates the disability of this type of person, I imagine.

I was sent by an ex-Servicemen's society for treatment, and up to the time I attended the clinic I had no knowledge of the physical methods in use. I had, however, always taken a great deal of interest in psychology since making acquaintance with the subject at university 25 years ago. I knew enough of the general principles to publish an article on "The Psychology of Road Accidents" in a leading review over ten years ago.

Experience of Treatment

I received two E.C.T. treatments at a large clinic under the assistant director (whom I will call Dr. X), and at the present date, after about 14 months, I still retain the following benefits: considerable but not complete relief from the stammer; complete relief from excessive irritability; somewhat improved capacity for work; a change from what seemed to me moods of the deepest depression to a less frequent and much shallower depressed mood; complete relief (to my great surprise) from a minor skin affection of some ten years' standing which had resisted other treatment.

My experience of treatment was as follows. At a preliminary interview Dr. X asked me to send him written accounts of my history, family background, and circumstances. He gave me a physical examination of the usual kind. I sent him a frank account of myself, and he then gave me a lengthy interview which included questioning under a drug injected into each arm. These injections temporarily eliminated the stammer.

He then, somewhat to my surprise, sent me home with two technical volumes—one a standard manual on depression, the other the bound papers of the Society of Psychological Medicine containing several papers on the various physical treatments. I, like Dr. Winnicott, was deeply shocked at the idea of leucotomy and disliked what I read of cardiazol more than I disliked the idea of E.C.T. Perhaps a layman or a psychiatrist with a special interest in perfection of mind may instinctively object to these treatments just as a dancer or athlete, with a special interest in perfection of body, might instinctively object to quite ordinary surgery. I was thus enabled to form my own opinion of the treatment and whether I wished to undergo it. Admittedly the evidence was empirical, as it must be for the layman—and often for the ordinary practitioner—even in the case of a common aperient.

Dr. X then interviewed me again in company with another patient who had developed a stammer after prisoner-of-war experiences. He explained the mechanism of aggressiveness and how in man it was expressed in speech. Later, seeing me alone, he prescribed six E.C.T. treatments. I asked if there were any risk of change of personality, character, or temperament. He assured me that the only effect was to restore the distorted personality to normal. I mention all this to show that, in my experience at any rate, the psychiatrist administering physical treatments is not necessarily the dangerous type, rightly feared by Dr. Winnicott, who may press buttons or give injections without careful regard to the psychical factors.

I approached the treatments with much the same attitude as I take towards a dentist's chair. I knew as much as a layman could learn of what to expect; I thought I had satisfying evidence that consciousness was instantly obliterated, that risk of injury was negligible, and that there was a high probability of benefit. In the event this evidence was confirmed by experience.

I disliked the form of restraint used but accepted it as one does a dentist's gag. My last sight of anything was Dr. X, a tall, upright, and commanding figure, standing just within my line of vision (I shall refer to this later). I then knew nothing whatsoever until I awoke some hours later from what seemed to have been a natural and refreshing sleep. I soon discovered some stiffness of the back and some pain near the temples on moving the jaw. However, I immediately knew that something important and *good* had occurred. A nurse was at the bedside, and I said to her, "That was very clever of you."

I felt light and easy in mind—nearer to being in a happy frame of mind than I remembered being for many years. Loss of memory was slight. The two main instances were that on my return home I was most pleasurably astonished to see my small son, and I had forgotten that I had a younger sister. It is remarkable how the appearance of a person one has forgotten as a result of E.C.T. seems almost miraculous, something created that instant, yet the person and all the circumstances return fully to consciousness at once. My own experience was that the memories lost returned with a pleasurable emotional tone. I have wondered whether this memory loss is somehow a reversal of the usual process whereby *unpleasant* memories are suppressed. An examination of the emotional tone accompanying returning memories might be illuminating. In my case no unpleasant memories returned in this special, sudden manner. The facts of my history carrying an unpleasant emotional tone (if I may so put it) were all present in my memory as before, but no longer seemed to have the power to drag me down into a depressed state.

I attended for a second treatment three days later. I felt very much greater apprehension and increased dislike of the whole thing. It had, I imagine, progressed from the dentist's chair to the operating theatre in my estimation, though I have never been operated upon. As I had had no experience that could possibly justify that apprehension I did my best to dismiss it as irrational. I had, however, formed the conclusion (on my own account) that the slight pain which had persisted since the first treatment was due to a strained back and a temporarily dislocated jaw. In spite of that I was puzzled to understand how an experience undergone during complete unconsciousness could lead to such apprehension. I was also astonished to have experienced the very striking certainty that something important and good had happened.

This attitude led me to decide on this occasion to close my eyes as soon as the electrodes were applied and concentrate upon trying to detect any sensation whatever between that moment and the time I should awake. My only experience was that, with my eyes completely but lightly closed, I did see one or two "stars" moving gently. They were the kind of "stars" one sees after a blow on the eye, but they drifted gently into view for an immeasurable instant and had no quality of violence whatever. They were not due to tight closing of the eyes, as I had closed them only loosely. No muscular sensation whatever accompanied them. This time, so far as I remember, my only loss of memory was that I did not dress completely before going to the rest room, and I forgot that Dr. X had asked me to see him before I left.

Subjective Effects

The most striking effect of these treatments on my behaviour and general attitude was that little routine duties and services to others, which had been a burden and even a cause for suppressed irritation, were now performed without the slightest hesitation and even with pleasure. My relations with my associates were made much more easy and natural.

I then, within the next day or two, began to have symptoms which I identified as the physical reactions to fear. I still found this difficult to understand in view of the absence of any conscious experience of anything alarming. I had frequent and violent heart disturbance—a gross flutter or palpitation—and, what alarmed me much more, a kind of "humming" or

fine tremor of the heart, which I disliked extremely because I recalled some story or other which I had read years before about a madman who was troubled with a "humming" in his chest. I also had for some days a mild but noticeable loosening of the bowels which I identified as similar to that occurring in some people when frightened. As a child and during the air raids I had experienced some heart flutter when excited, but I was not normally subject to the bowel effect.

I was also "haunted" by certain subjective experiences which I decided must be "memory images" (my terminology). They were closely associated with the heart symptoms—i.e., when these images came to mind the heart trouble began, and I had to put them out of mind, turn my head quickly, and look at or think of something else, for fear that if I continued to contemplate them the heart would get worse. These images were: (1) An explosive flash similar to one I had seen on the films of a mine being exploded *under water*. The water instantly goes white in a kind of aqueous flash radiating from the centre horizontally. It recalled the mine explosion because of its horizontal nature and its instantaneous spread in a liquid medium—as distinct from the less controlled explosion in air. (2) A somewhat similar image in many respects. In this case the memory was as if some flaky precipitate such as ground rice or soap flakes were at the bottom of a vessel of water. The flakes seemed suddenly and instantly separated vertically by a horizontal force through the water. They then settled down slowly through the water by their own weight until all was at rest again. (3) A flag, attached to a flag-pole, is suddenly and instantly stiffened as if by a powerful wind. These were not precisely "seen" but present as visually conceived ideas. I described them to Dr. X, who said similarly explosive ideas were frequent in E.C.T. patients. (4) A fourth image of this nature, but more easily understood, was the figure of Dr. X himself, standing beside the treatment couch as I had seen him at the moment of the first treatment. He was precisely as I had seen him, but this image had for me the quality of the sinister dangerous professor in a thriller. Contemplation of it started the heart symptoms just as in the case of the others. I found it made not the slightest difference to my attitude towards him next time I saw him. But it might be well for the doctor to stand out of sight of a patient at this instant.

I have been much interested in the fact that these three "memory images" have all the same spatial quality. In each case the force is applied horizontally; and this is the case, of course, in the application of the treatment. I communicated all this to Dr. X and attended at the clinic again. I felt that these symptoms were in some way a warning that further treatment might be dangerous. I was prepared to undergo further treatment if it were recommended, and no doubt I would have been able to behave reasonably about it as before. I was, however, by no means confident of maintaining control against the really severe apprehension and the heart symptoms, which afflicted me even when waiting to see Dr. X.

One other memory I could not get out of my head for some weeks. This was a genuine memory of the sound of the strange inhuman cry from other patients under treatment. Perhaps I am too sensitive, but I think it might be well if steps were taken to deal with this. Although I knew it was an automatic expulsion of air and emotionally meaningless, it stuck constantly in my mind as a horrible thing.

In the event, Dr. X decided that it would be better to suspend treatment for the time being. He reassured me about my heart, saying the symptoms would gradually pass off, which has been the case. Within two months of treatment I could not have written this without heart symptoms. The detailed recollection now has no such effect.

I have not been for further treatment because I am considerably improved and I hope it is not necessary. I am convinced that to complete the course might lead to further improvement; but in the absence of the more distressing symptoms I formerly experienced I do not feel that the renewal of some weeks of such fundamental disturbance is worth while. If I am advised otherwise I shall be willing to undergo further treatment, but I hope to avoid it.

I have made no record of dreams and remember none, though I am pretty sure I had some unusual dreams. One night I awoke in sheer formless terror. It was causeless and I knew it was irrational. I put on the light, sat up and waited until it had passed, and then went to sleep again. Another night I believe I had a slight muscular reproduction of the fit, or the sensation of it.

A most interesting effect of the treatment was that my imagination was very greatly stimulated. I soon began to write a fantastic Oriental fairy story, with which I was, and am, quite pleased. I had not previously done anything of the kind. I also took up work again on a book and completed about 60,000 words of it satisfactorily.

I suppose I am introverted. It is a fact that the treatment is felt as a threat to the secret inner world. I was most anxious about it. I knew that something I valued would be and was being destroyed. But might it not be a false value that I placed upon that inner world? I believe that it was a false value; otherwise, why should I awake from treatment with the certainty that something good had occurred?

THE BIRTH OF A BABY

The film entitled "The Birth of a Baby" has been classed by the London County Council as suitable for "A" exhibition and is soon to be shown to the public, at least in London, at one of the news theatres. A special showing of the film on June 11 was arranged by the National Baby Welfare Council, which is sponsoring the distribution of this American essay in adult education. The English commentary before and after the film proper points out the differences between American and English obstetrical technique and practice. It seems unfortunate, however, that during this commentary there should be only a succession of rather dull "stills" in strange contrast to the opulent setting of the film, particularly as it relates to the American family doctor. His equipment would be the envy of even a modern maternity hospital in this country. Despite these and other criticisms to which we drew attention when this film was first shown privately in London (*B.M.J.*, 1940, 1, 264), the film has a real educational value. It contains nothing that would shock or unduly upset any normal young woman, and it presents in an easily assimilable form much of the detail of antenatal care preparatory to confinement at home. There are few doctors who will not be interested by it, and there must be very few young married women who would not benefit by seeing it.

SPENS COMMITTEE FOR SPECIALISTS

INTERDEPARTMENTAL COMMITTEE OF INQUIRY

The Minister of Health, Mr. Aneurin Bevan, and the Secretary of State for Scotland, Mr. Joseph Westwood, have appointed a committee of 11 members to recommend "what ought to be the range of total professional remuneration of registered medical practitioners engaged in the different branches of consultant or specialist practice in any publicly organized hospital and specialist service." The full terms of reference, similar to those of the committee of which Sir Will Spens was chairman and which has recently submitted a report on the remuneration of general medical practitioners (Cmd. 6180), are:

"To consider, after obtaining whatever information and evidence it thinks fit, what ought to be the range of total professional remuneration of registered medical practitioners engaged in the different branches of consultant or specialist practice in any publicly organized hospital and specialist service; to consider this with due regard to what have been the financial expectations of consultant and specialist practice in the past, to the financial expectations in other branches of medical practice, to the necessary postgraduate training and qualifications required, and to the desirability of maintaining the proper social and economic status of specialist practice and its power to attract a suitable type of recruit, having regard to other forms of medical practice; and to make recommendations."

The committee comprises: Sir Will Spens, C.B.E. (Chairman); C. R. Dale, Esq.; Sir Thomas Gardiner, G.B.E., K.C.B.; T. Lister, Esq., M.A.; Miss Elizabeth Looker, O.B.E., B.A.; Prof. D. Murray Lyon, O.B.E., M.D., F.R.C.P.Ed., F.R.S.Ed.; Lord Moran of Manton, *M.C.*, M.D., P.R.C.P.; Leslie E. Peppiatt, Esq.; Prof. Harry Platt, M.D., M.S., F.R.C.S.; S. Cochrane Shanks, Esq., M.D., F.R.C.P., F.F.R.; J. R. H. Turton, Esq., M.B., F.R.C.S. Mr. T. B. Williamson, Ministry of Health, and Dr. D. P. Stevenson, M.R.C.S., L.R.C.P., Assistant Secretary, British Medical Association, are Joint Secretaries.

Reports of Societies

ERYTHROBLASTOSIS

Dr. LOUIS K. DIAMOND, of Harvard, addressed the Section of Paediatrics of the Royal Society of Medicine on May 23 on erythroblastosis, or haemolytic anaemia of the newborn. There was an erroneous impression, he said, that this was a new condition, of recent origin, but it was well described in English literature before 1900; the pathology was fully illustrated by German investigators in the early part of the twentieth century; in 1932 at Harvard records of 20 infants manifesting a single underlying morbid process of erythroblastosis were published; and in more recent years much had been written on the Rh factor.

Problems of Rh Incompatibility

The Rh factor was considered to be positive in 85–87% of the white population of the United States, in 95% of negroes, and in 99% of Chinese. An investigation of 2,500 American ex-Service men showed that more than 5% were Rh-negative and on receiving the Rh factor by transfusion developed antibodies. The danger of sensitization was much more than theoretical and must be borne in mind when giving transfusions. It was essential that no childbearing woman be given a transfusion until it was first determined whether she was Rh-negative and might or might not have Rh antibodies.

In discussing sensitization during pregnancy Dr. Diamond dealt with the effect on the progeny of an Rh-positive father and an Rh-negative mother. If the father was homozygous the children would be Rh-positive and each of them potentially might be a means of sensitizing the mother; if the father was heterozygous, half the children might be Rh-negative, and there was less danger. In addition it must be assumed that the placental barrier might be faulty and some foetal red cells might cross over and enter the mother's circulation. The first pregnancy was likely to be the least affected, because the mother was undergoing slow sensitization during that time; it was in later pregnancies that the effect was more pronounced. One mode of sensitization which had not been appreciated until a number of cases of this sort had happened resulted in about half a dozen women from one particular clinic in their first pregnancy having babies with erythroblastosis. On investigation it was found that at this clinic it was customary to give intramuscular injections of blood as a means of curing vomiting during pregnancy. In the control of haemorrhagic disease in the newborn, therefore, it was important to refrain from using intramuscular blood until it was ascertained that the recipient was not Rh-negative.

It was important, Dr. Diamond continued, not only to determine the Rh type of every recipient of blood and of every woman during childbearing, but to follow the sensitizing process, and to test the husband's blood and, if possible, to ascertain its homozygous or heterozygous quality. One other practical consideration was that obstetricians should be forewarned of the need to exercise great care before using the husband as a donor for transfusion to the wife. Every woman should be typed during the antenatal period; the husband and children should be typed if the woman had been found sensitive, and, again in special cases, the woman's serum should be searched for abnormal agglutinins. There was always the possibility of a woman being sensitized to the factors in her husband's blood which she herself lacked.

Clinical Problems

With regard to clinical problems to be faced by the paediatrician, about 20 years ago the blood of the father was generally used for transfusions, and many transfusions were necessary because the red blood cells did not seem to survive as expected. The majority of children recovered, however, especially if there were no complications such as severe jaundice or cardiac failure. There were certain complications of erythroblastosis which were frequently called to the attention of the paediatrician. First there was the brain damage which occurred. In his series of children who survived some showed damage to their higher centres and muscle control, but a fair number had shown relatively little disturbance later in life. The prognosis must be guarded in all cases. One complication, less serious, but alarming to parents, was the heavy staining of the tissues of the infant with the pigment present in jaundice. This pigment might be deposited in the teeth which were being formed at birth and later, so that they took a green or greyish-green colour. The parents might be assured that the permanent teeth would be normal in appearance. Changes were not observed in the bones with any frequency, and most of the children who had not suffered nerve damage would survive.

Up to 1941, before the Rh factor was recognized, transfusion was given in an arbitrary way. Afterwards Rh-negative blood was used, given frequently in small transfusions, and whether because of this or because the cases were recognized earlier the mortality dropped during the next few years from 40% to 30% among newborn infants. Then, it being a frequent experience that a normal infant at birth developed trouble later on, an investigation was made and it was found that in most of such babies at birth there was a certain amount of circulating antibody. Thereupon the practice developed, in addition to the transfusion, of delivering these babies two or three weeks before term, and the result of this was a further decrease in mortality. In a series of 350 cases the mortality dropped to 20%. Finally, still another improvement in therapy was effected. This was made possible by the development of a plastic catheter in the umbilical vein of the newborn infant by means of which constant withdrawal and replacement was possible. The infant's blood could gradually be replaced so that at the end about 80% of the infant's red cells and serum had been removed. The child was kept warm throughout the procedure, and oxygen could be administered. Relatively little difficulty was found in using this plastic catheter. This technique, together with the earlier delivery, was employed from January to July, 1946, in 15 severe cases, of which 9 died, and, with an improved technique, from August, 1946, to February, 1947, in 20 severe cases, of which only 3 died. Among 36 moderate or mild cases there had been only 3 deaths.

Dr. Diamond recapitulated the improvement in mortality following advances in treatment as: up to 1941, simple transfusions from father, 40% mortality; in 1942–4, transfusions of Rh-negative blood, 30% mortality; in 1944–6, the same, plus delivery before term, 20% mortality; in 1946–7, early delivery plus replacement transfusion—the present treatment—10% mortality. Of the babies who had died some had succumbed to the consequences of immaturity. Finally, he said that more study was needed before the problem of the management of blood incompatibility and antibody action between mother and child was solved. There was no justification for complacency in this field, neither was there any reason for undue anxiety when the problems of Rh incompatibility had to be faced.

At a meeting of the North of England Obstetrical and Gynaecological Society in Manchester on April 18 Dr. VINCENT CORBETT described a case of vesico-uterine fistula causing symptoms in a woman whose youngest child was 10 years old. The aetiology was obscure, but it was suggested that the fistula might have been made by an attempt to cause abortion. Dr. VAUGHAN JONES described two unusual cases of secondary post-partum haemorrhage. Dr. R. NEWTON described a case in which supravaginal hysterectomy showed a true placenta accreta in a fundal sacculation which had ruptured. Dr. J. W. A. HUNTER described three cases of carcinoma of the uterus appearing twelve or more years after the treatment of menopausal menorrhagia with radium. Mr. PERCY MALPAS read a note on Smellie's method of forceps traction.

The Morgan W. Williams Bequest is a fund from which grants are awarded to medical practitioners and others ordinarily resident in Glamorganshire. The grants are intended to assist those wishing to travel abroad on short visits of medical interest. It is a condition of any award that the person to whom the grant is made shall forward to the secretary of the Welsh National School of Medicine a report on his visit. Applications for grants, which should if possible be made at least three months before the proposed travelling date, should be sent to the Secretary, The Welsh National School of Medicine, 10, The Parade, Cardiff.

Correspondence

Physical Therapy of Mental Disorder

SIR,—By showing so clearly that even a psycho-analyst has his blind spots, his prejudices, and his ignorances, by descending to the level of invective, and by upholding the "right" of psychological science against the "wrong" of physically orientated therapy, Dr. D. W. Winnicott (May 17, p. 688) has implicitly declared to us that, even in the name of positive science, it is indeed difficult to get away from the evaluative statement. He can never free himself from making such statements as "the wrong kind of doctor, skilled in the wrong way," "depression is the illness of valuable people," and "I think leucotomy is the worst honest error in the history of medical practice." He deplores, condemns, is shocked and horrified, and he points the accusing finger. His statement that ". . . scientists hate empiricism and regard it as a stimulus to research," which I cannot believe he means, is the kind of slip-of-the-pen which we can safely leave Dr. Winnicott to sort out with his unconscious.

The notion upon which his whole argument seems to rest is that magic and science are irreconcilable, wholly alien to each other. It is upon this point, rather than upon the specific issue of physical therapy in mental disorder, that I should like to join issue with him. It should be clear enough that when Dr. Winnicott refers to "magic" it is with an associated feeling of hostility, while his references to science are those of a protagonist. He loves science because he is dedicated to it. He holds to the one and eschews the other. Now it seems to me that it is this fundamental division of all experience into the "good" and "bad," the "accepted" and the "rejected," which is not only the origin of all evaluative judgments but is, in Dr. Winnicott's own case, the underlying process in his prejudiced attack. Furthermore, it would seem that, in calling magic "bad" and science "good" he is doing no more than reversing traditional custom. In psycho-analytical language, he is replacing a traditional, worn out super-ego with his own 1947 model. He arrogates to himself the function of Inquisitor and with zeal pursues the misguided leucotomist in true heresy-hunting fashion. He magically invokes science to condemn magic. The condemnation of a practice as immoral (in this case leucotomy and E.C.T.) which issues from a philosophy that implicitly denies morality (in so far as it is positive and non-evaluative) is an absurdity. Dr. Winnicott, in descending from his Olympian perch and engaging in the humdrum squabbles of mortals, cannot, except by most serpentine logic, retain his Olympian status. He cannot be a referee in his own fight; but this appears to be what he is trying to do, and I must draw his attention to it. As to his personal opinions, however prejudiced they may be, he is entitled to our respect, but his authoritarian utterances deserve another fate.—I am, etc.,

Aberdeen. W. MALCOLM MILLAR.

SIR,—Dr. D. W. Winnicott's attack (May 17, p. 688) on "Physical Therapy of Mental Disorder" merits some comment. Dr. Winnicott is a paediatrician and a Freudian child psychiatrist and cannot therefore have had much personal experience of these methods. Before one dismisses so lightly these important developments in psychiatry, as Dr. Winnicott does, one might profitably examine the actual results of these treatments. When E.C.T. is used in cases of involutional depression, figures of from 70 to 90% of recoveries are constantly reported, (Sargant and Slater, 1944), while hospitalization is reduced in cases of depression from an average of 63 weeks to 6 weeks (Shelton, 1942). With regard to the insulin coma treatment of schizophrenia, a statistical investigation in New York has shown it to be so successful that Governor Dewey has made it a routine in State hospitals. It was calculated that each patient was saved 3½ months' hospitalization through the treatment. Swiss and German investigations show that the recovery rate in treated as against untreated cases is in the proportion of 2 : 1 (Freudenberg, R. K., Sargant, W., Mayer-Gross, W., and others). When prefrontal leucotomy is given to the most hopelessly ill patients in mental hospitals, one out of three becomes well enough to return home, while 30% are much improved. Brody and others have been unable to find any intellectual deterioration as a result of the operation.

In view of the long and painstaking scientific research which has made these results possible (and they represent a vast alleviation of human suffering), it is difficult to understand why Dr. Winnicott can describe these treatments as "brutal," or why he says that it is better to do nothing than to use them. Perhaps the reason why he has been misled is because it is well known that serious psychological symptoms in the case of children can clear up in a remarkable manner as the result of psychotherapy, and even in some cases merely by lapse of time. It would be wrong, however, to suppose that the same applies to adults, and especially middle-aged adults, who are most frequently the objects of shock treatments. The best analysts are careful to select their patients, and even Freud admitted that his methods were not successful with elderly patients or with psychotic patients. It would therefore seem illogical for Dr. Winnicott to dissuade such persons from having any treatment at all. He evidently supposes that because a mental conflict has been a causative factor in the onset of an illness, the patient should be treated solely by psychological methods. It would be just as reasonable to forbid a patient suffering from Graves's disease to have an operation on the ground that emotional conflict was a factor in its causation.

When Dr. Winnicott regrets that psychiatrists are as interested in biochemistry and neurology as in psychology, he appears to be guided by a mistaken belief in the unreal Cartesian dualism of mind and body. For the psychiatrist, however, the patient's organism must be considered as a mind-body unity and must be treated by psychotherapy and physical means as the situation demands. If Dr. Winnicott were right, the psychiatrist would need no medical knowledge whatever. It is not true to say that no doctor would agree to have shock treatment. More than one has personally testified in the medical Press to the efficacy of E.C.T. for melancholia, while three research workers to my knowledge have submitted to a number of shocks in order to test the effects of different wave forms. One of these described the subsequent sensation as "like having drunk two glasses of champagne."

It is difficult to understand Dr. Winnicott's prejudices, considering that so few patients dislike the treatment, while those who do are easily anaesthetized beforehand with a little "pentothal." Serious results may, however, follow from an attack of that character by a man of Dr. Winnicott's standing, for the patient may be denied the only form of treatment which will save him many months, or even years, of suffering in a mental hospital.—I am, etc.,

London, W.1. A. SPENCER PATERSON.

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SIR,—The inspiring and stimulating article by Dr. D. W. Winnicott (May 17, p. 688) shines like a beacon of light in the dark wilderness. I would like to write constructively further to my previous letters, which I am given to understand have received a not inconsiderable measure of support. It is my view that it is quite unnecessary to be a doctor in order to give good psychiatric treatment. The important desideratum is to have people who by their characters, deep culture, and infinite patience are best fitted to undertake treatment in this dangerous subject. A psychiatrist does not always possess these attributes; in fact there are many lay people who with a course of training in normal and abnormal psychology would make much better therapeuticians. There are some distinguished psychiatrists and some good ones, but unfortunately they are in the minority.

I am in whole-hearted agreement with Dr. Winnicott in his views against E.C.T. As regards the operation of prefrontal leucotomy, which I witnessed many years ago as one of the first thirty to be done in this country, it is one of the most dreadful operations I have ever witnessed, and I can pay

tribute only to the skill of the surgeon and to nothing else; but I would suggest that it is fundamentally wrong to operate grossly on the brain for conditions we do not understand and which may have a spiritual background and are far beyond our knowledge. Perhaps one of our psychiatrists would volunteer for the operation if it is contended that it does no harm.

I venture to prophesy that many of these modern treatments will gradually fall into comparative decay and will be used only in a selected one-fifth of the cases in which they are now used. Psychiatrists must get out of the habit of trying to fit every single action of a patient, whatever it may be, into a pet pattern and jargon of their own; they would still somehow or other fit in these actions if the patient acted in exactly the opposite way. A perusal of some of their reports amounts to nothing more than a schoolboy copy of half a page of a text-book. After all, to a great extent psychology is only "informed" common sense.

The admirable and most instructive book by Dr. C. P. Blacker on *Neurosis and the Mental Health Services*, London, 1946, deals emphatically with this as the most important problem—namely, the proper selection of a psychiatrist. It tries to deal with all the difficulties of the situation from a short- and long-term policy. If an investigation is undertaken piecemeal in this way it will fail. What is needed is a commission of inquiry into every aspect of the case. It is absurd for psychiatrists to inquire into their own system and faults. The inquiry should be conducted by responsible and distinguished people into the mental hospital system and conditions therein, the selection and training of psychiatrists, the drastic curbing of their powers, the Chancery laws, the certification laws, the rehabilitation of the patient and the substitution of a greatly increased social medical service in place of much that now goes under the heading of psychiatry. They are in danger of being regarded in many cases as a menace and in other cases as a source of amusement. These are the views of an ever-increasing number of doctors, and there are rumblings of more than discontent in the public mind which the real leaders of psychiatry would do well to heed in good time. I have myself drawn up a memorandum which I hope might be of some use to a commission of inquiry.

I would like to ask, say, twenty psychiatrists to undergo a course of E.C.T. in order to record their own impressions. We should learn a lot from this. Let it not be said that their motto is "Do as I say and not as I do." Of all people as far as is humanly possible they should be beyond reproach. The name itself "psychiatrist" should be changed, as it conveys a false and mystic sense of importance to the lay public.

In the past, and in a few exceptional cases, there was some brutality in some mental hospitals. The explanation by Dr. Winnicott of this brutality is most interesting and as far as I know quite new, but how then would Dr. Winnicott explain the subconscious motives of a few doctors who winked at what happened? I know of one case where an intelligent and educated person was wrongly placed in what is euphemistically called an observation ward. Here he was so treated that it is a wonder that he never went completely out of his senses. No theories can explain away such facts. Yet there is no remedy in law for this procedure, for the financial loss, the misery and suffering caused to the patient and his family, and for the after-effects. All the participants in such a case will find it very easy to play the victim off in order to ease their subconscious guilt feelings, but will not face up to facts and do justice, albeit at a very late stage, to the victim by adopting the obvious and comparatively simple way out. The injured patient should remain for always among his friends; it would be fatal for him to leave them.

It is interesting to note in the same issue of the *Journal* a memorandum on threatened suicide (*Supplement*, May 17, p. 103). What an anti-climax to have to reiterate at this late stage that mental trouble may be a disorder of the emotions and not of the intellect.

The most important sentence in my opinion in Dr. Winnicott's article, so wonderfully expressed and which is the kernel of rehabilitation, is when he says that massed guilt feelings and hate and fear are aroused in people who are concerned with mentally ill people. I would like to add to this wonderful sentence, which may have far-reaching consequences, that the more supposedly mentally ill people defend themselves and their rights the more guilt is aroused in the people they meet in order to hide their own subconscious aggressive feelings and hate and guilt. If this question can be dealt with properly a great deal will be done to prevent the perpetuation of the condition of an innocent patient once falsely labelled. The patient, or victim, as always comes first, and the desires of interested parties in many particular instances, to whom often the patient's breakdown is almost entirely due, and in other cases was deliberately fostered by them, should be recognized as being concerned with their own position alone.

Just as Dr. Winnicott admits his prejudice in certain matters so I admit mine in others, but this is no reason why the facts I have given should not be correct. I am deeply grateful to Dr. Winnicott for what I consider to be a momentous article, and I would like to pay tribute to the good work that is done by the right type of psychiatrist.—I am, etc.,

London, N.W.11. A. LIONEL ROWSON.

SIR,—I am interested in the correspondence on this subject and do not hesitate to express my views that there are patients who do benefit from E.C.T., leucotomy, and other physical forms of treatment, but there are those for whom I am certain that psychotherapy is the correct form of treatment. I must make a correction here that general paresis is an organic condition and would therefore be treated by organic methods (Dr. G. Tayleur Stockings, May 31, p. 778). I appreciate that in making this statement I may be on uncertain ground, as some research workers may be on the point of discovering an organic basis for the neuroses, but I know from my own experience and that of other analysts that patients can obtain a state of normality which they never knew in their lives before they were analysed, and this in the absence of any physical treatment.

I would not have been tempted to make this contribution had it not been that I have been unable to get what I consider adequate physical treatment for a patient I have under analysis. Briefly, a severe obsessional male of 40, who lives 30 miles away, was referred by his doctor in December, 1946, for treatment. At that time he had pruritus ani for which no physical factor could be found. I took him on for analysis, but the severity of the pruritus soon prevented him from making the daily journey. As I had had fairly considerable experience of continuous narcosis and skin conditions I advised his admission to a licensed house for this form of treatment. After a month he was relatively free from irritation and analysis resumed, until about 5 weeks ago when the pruritus again became painful, complicated by a general septic condition which put an end to travelling. He was willing to have further narcosis, but not at the previous establishment, because he had found the quarters so uncomfortable.

I did not anticipate any difficulty in finding another licensed house where he could have this treatment, especially as it had proved its value for him before. We found another licensed house where his condition was diagnosed as a barbitone rash, continuous narcosis was refused, and E.C.T. made a condition of his continued residence, in spite of the fact that he had previously had it with disastrous results. I saw him after this experience, which had shaken his faith in psychiatrists still more. On account of his physical condition he was unable to make the daily journey to me, and I agreed to find a licensed house which would undertake narcosis. This I did, explaining the position by telephone, and to prevent any misconception followed this up with a report. Here they tackled his septic condition very well, but the whole question of continuous narcosis has been evaded.

It is interesting to note that there are vogues for a particular brand of physical treatment, and it is impossible to obtain one which is apparently outmoded however good it may be.—I am, etc.,

Bishop's Stortford, Herts. D. N. HARDCASTLE.

SIR,—I should like to join the doctors defending the physical methods in psychiatry against Dr. D. W. Winnicott's point of view (May 17, p. 688) with the simple statement, which I am convinced is right, that mental diseases *sui generis* do not exist. I firmly believe that all mental disorders are but symptoms of the acutely, subacutely, or chronically diseased physical organ called cerebrum. Without a physical disability of the said organ—directly or indirectly—there are no mental disturbances. "In corpore sano at mens sana." Those who do believe in physical causes are nearer the truth and subsequently nearer the solution of the great mystery of mental disorders than those who think that the philosophical-psychological theories are the last word in psychiatry. It is evolution when psychiatry turns back to medical research, seeking with the help of cerebral physiology and pathology the causes of mental disorders. It is refreshing to see the increasing number of doctors realizing this fact.

Till we know, E.C.T. is under present circumstances one of the best if not the best treatment for shortening the time of hospitalization in a series of mental disorders, and what is

means to have a patient staying weeks in a mental hospital instead of months one has only to ask the husbands, wives, sons, or parents of such a patient.—I am, etc.,

Bodmin. ERNEST E. FELDMESSER.

Nicotinamide and Diabetes Mellitus

SIR,—In the *Journal* of Feb. 9, 1946 (p. 218), you kindly published my results of massive nicotinamide therapy in diabetes mellitus. These investigations were prompted (as then described) by an original theory that diabetes mellitus was a vitamin deficiency disease, and when commencing "experimentation" by using massive dosages of different vitamins I was unaware that work had previously been executed on nicotinamide and carbohydrate metabolism. I have since learnt that such investigations have been reported. After publication of my results I received an overwhelming amount of correspondence from interested colleagues all over the world (some themselves diabetics), who promised to report their results to me. This was indeed welcome in view of the fact that I wished to pursue the question more extensively and the number of diabetics under my care was rather small. I have since collected an imposing and interesting amount of data which I hope to publish at a later date.

I was therefore most interested in Dr. H. J. Wade's results of nicotinic acid amide on the sugar tolerance curve in six cases of diabetes (March 27, p. 414). Dr. Wade asserts that my results prompted him to pursue this investigation further, but unfortunately he did not pursue it very far. His administration of nicotinamide was of too short duration and the numbers of cases lamentably small. This is regrettable in view of Wade's superb opportunities for exhaustive investigation (Dr. Wade is in charge of the Diabetic Clinic at the Salford Hospital, Manchester).

The fact that some workers report poor or negative results with this therapy need cause no despondency. My theory is that nicotinamide "slogs" the remaining islets of Langerhans to greater insulin production, but does not affect the sugar tolerance curve in itself. The beneficial results of nicotinamide depend upon the amount of functioning pancreatic tissue. If the pancreas is completely fibrosed or lamentably poor in islets of Langerhans, then the nicotinamide will have no effect irrespective of dosage or duration of dosage, because a general cannot exhort a non-existent army to greater endeavour. Should there be, however, a reasonable quantity of functioning pancreatic tissue, then varying good results will be obtained by means of the nicotinamide stimulating the remnant of secretory tissue to greater production. According to the amount of islet of Langerhans present, so the results will vary.

I would suggest, therefore, that every diabetic be administered with massive doses of nicotinamide. Some will receive no benefit, whereas others, with more functioning pancreatic tissue, will be able to partake of the joys of eating more liberally and extensively without constant insulin injections. I hope to publish more rather interesting data on this subject later, but meanwhile I shall be grateful if interested colleagues will send me their results.—I am, etc.,

Poole. W. GORDON.

Folic Acid

SIR,—Dr. Cecil L. Forde reports (May 24, p. 740) the use of folic acid in a case of subacute combined degeneration which had, in addition, the peripheral blood picture of pernicious anaemia. He reports that the blood picture "responded" to "intensive" liver therapy for three weeks, but that the nervous lesions are not affected. Folic acid was given and "in a few days" there was marked improvement in the neural condition. If this improvement continues on folic acid alone this case deserves a detailed report, for it is, to my knowledge, the only example in the literature of a case of subacute combined degeneration which has responded to folic acid therapy. It is reasonable to suggest, however, that the three weeks' intensive liver treatment was the most likely cause of the improvement—nervous as well as haematological—in this case. It is an established fact that unless treatment of pernicious anaemia is adequate—i.e., red cell count of 5,000,000 per c.mm. or more, with a normal mean cell volume—subacute combined degeneration may supervene. Such *adequate* treatment of pernicious anaemia is always possible in the uncomplicated case, and, unless full haematological details are given, the onset of, or the progression of, subacute combined degeneration in pernicious anaemia adequately treated with liver extract cannot be accepted.

The work of Spies in America and Davidson in this country—to mention but a few—has already made it clear that folic acid will not prevent the development of the neural complications of pernicious anaemia nor improve them if they are already present. Severely progressive subacute combined degeneration has been reported in many cases receiving intensive folic acid therapy. This is a matter of grave concern to the patient and the doctor.

Folic acid is still in the experimental stage. It is *not* adequate treatment in pernicious anaemia, for in only a handful of reported cases has folic acid restored and maintained a normal blood picture. Much more research is required for the establishment of the indications for folic acid therapy. Spies—and the manufacturers of folic acid—have already recommended that pernicious anaemia should not be treated by folic acid alone because of the danger of the onset of subacute combined degeneration in such cases treated with massive doses of folic acid. It is surprising that so far there has been lacking in British journals the warning that folic acid is inadequate for the *routine* treatment of pernicious anaemia. There is still no substitute for adequate liver therapy in this condition.—I am, etc.,

Frodsham, Cheshire. J. G. A. MCSORLEY.

Vitamin C Deficiency

SIR,—In *The Russells in Bloomsbury*, by G. S. Thomson, there is a passage referring to a treatise on scurvy circulated in 1665: "He [Dr. Maynwaringe] was referring particularly to that disease [scurvy] and to nervous complaint or complaints which went by the name of melancholia or hysteria and were associated by Maynwaringe with the Scurvy," and later: "The real root of the trouble lay in the quantity of salt meat eaten of necessity by both rich and poor." In the *Journal* of May 17 (p. 679) Dr. L. I. Hatherley reports a case of vitamin C deficiency lasting six years which, within half an hour of the injection of ascorbic acid, instead of being weak, apathetic, and apparently dying became alert, bright, and cheerful. Later a deficiency of vitamin P was thought to be present in addition. Many years ago at a meeting of the Royal Society of Medicine I heard an Arctic explorer quoted as saying that he only once had any trouble with scurvy, and that was when a party instead of shooting bears for food lived on tinned food found in a cache.

As a poor substitute for lightly cooked meat for the past few years I have prescribed black-currant purée in a number of cases suspected of vitamin C and P insufficiency and more especially recurrent subconjunctival haemorrhage. At present I have a case of intra-ocular haemorrhage under treatment, as no other treatment has had any success. From clinical experience and the studying of numerous reports, etc., I suggest: (1) that much of the present tiredness, ill-health, etc., is due to deficiency of vitamin C and P; (2) that more fresh meat should be on the ration; (3) tinned meat should not be included in the meat ration, as its position in our diet is misleading; (4) we are certainly being starved, as with the present calories, sufficient or insufficient, the chance is remote of a sufficiency of vitamins being present.—I am, etc.,

Southsea, Hants. F. C. B. GITTINGS.

The Nation's Food

SIR,—I find your "Medical Notes in Parliament" (May 31, p. 790) most interesting, for it appears that in the House of Lords on May 22 Lord Addison proceeds to prove Dr. Bicknell's statement to be true and anything but false, sloppy, or inaccurate. It seems generally agreed that the domestic rations yield 1,600 calories per day and that unless one is financially placed so that one can afford to eat in restaurants, the remaining 1,300 calories per day, which are necessary for normal health, have to be made up of bonus issues of sugar, jams, meat pies, sausages, and the sweets ration. Lord Addison states that if the total quantity of food going into consumption is divided by

the total population it will show that each person gets 2,900 calories per day, but of course this gives a wholly wrong interpretation of the facts, since those who can eat in restaurants must consume more calories than those who cannot afford to do so.

Many of my national health insurance patients cannot afford to purchase meals in restaurants, and, as Lord Cherwell has so wittily pointed out, these unfortunate people will have to consume either 100 oz. (2.8 kg.) of fish, or 5 lb. (2.2 kg.) of potatoes, or 200 oz. (5.7 kg.) of cabbage in order to make up a deficient 1,300 calories. This is a gargantuan task which is beyond the ability of any patient I have at the present moment.—I am, etc.,

Lewes, Sussex. E. J. S. BARTHORPE.

De Morgan's Spots

SIR,—Since it is impossible to prove the exact nature of De Morgan's spots by experiment, I venture to suggest that dialectic consideration supplies us with a plausible explanation of their occurrence. I believe I was justified in writing (*Med. Pr.*, 1943, **210**, 219; and *Rare Diseases and some Debatable Subjects*, 1946, London, p. 51) the following: "They are apparently true benignant neoplasms (minute capillary angiomata), and, although some of them disappear by spontaneous involution (? thrombotic or atrophic closure of the supplying blood vessel), they tend on the whole to increase in number with the individual's age . . . I regard them as simple *mutational* tumours (rather than telangiectases) of the cutaneous capillaries."

I can think of no other equally plausible explanation of their occurrence. They apparently illustrate only one type of common non-malignant mutation of somatic cells at the surface of the body; some other types doubtless contain pigment, as the one did which was microscopically examined by Sir John Bland-Sutton, if indeed the pigment in that particular "spot" was not due to a capillary rupture which led to involution.

I certainly am not the first to have suggested this mutational explanation for various "spots" which appear spontaneously on the surface of the body (cf. allusion by Lockhart Mummery when discussing malignant mutations of somatic cells), but I believe that "ruby spots" will come to be regarded as the most conspicuous illustrations of non-malignant mutations of somatic cells.—I am, etc.,

London, W.1. F. PARKES WEBER.

SIR,—The very careful and convincing paper on De Morgan's spots by Capt. A. R. Murison, Lieut. J. W. Sutherland, and Flying Officer A. M. Williamson (May 10, p. 634) is a final refutation of the idea that these spots have any connexion with cancer, and Dr. Parkes Weber, in his letter of May 24, has underlined this conclusion, which I think is universally accepted. These spots are flattened circular lens-shaped islets of connective tissue lying in the thickness of the epithelial layer of the skin and slightly raising it above the level of the surrounding skin. Each of them has a narrow vascular pedicle, like the stalk of a mushroom, through which blood vessels reach it. Owing to lateral movements of the skin this pedicle is subject to frequent obstruction, too temporary to be called strangulation, and capillary angiectasis consequently occurs in the spot, which assumes its characteristic scarlet colour with a sharp well-defined margin. Gentle rotary pressure with a glass slide can be made to empty the dilated vessels and the colour disappears to return as soon as the pressure is released.

The invasion of epithelium by connective tissue is a reversal of the process which produces carcinoma. I have never known a malignant growth of any kind originate in one of these spots, and they must be regarded as entirely benign and unimportant products of advancing years, especially liable to appear in the region of the waist, where the skin is subject to pressure and to lateral displacement.—I am, etc.,

London, W.1. W. SAMPSON HANDLEY.

Passive Immunization against Measles

SIR,—It would appear from all reports that for children under five years old the gamma globulin fraction is the safest and most reliable method of obtaining passive immunization against measles, an added advantage being the smallness of the dose when dealing with these small children. As far as I can ascertain the only material readily available for this purpose (apart from the parent's whole blood) is convalescent measles serum. With this the dosage is rather bulky, and there is the danger of the serum containing the icterogenic agent of homologous serum jaundice. In this connexion I have heard that one or two deaths have occurred, and this has deterred me from using this substance. I should be grateful for an authoritative opinion as to whether this risk is such as to contra-indicate the use of convalescent serum.

My main point in writing this letter, however, is to inquire why gamma globulin is not manufactured in this country, and if for some reason it cannot be manufactured, then why is it not imported? The substance must have been in use and favourably reported on for over two years, yet none of the local chemists can obtain it from the wholesale chemists, as it is apparently manufactured solely in America and is not being exported to this country. Surely, Sir, it would be of far more value, if it is a question of dollars, to have gamma globulin rather than American brands of iron compounds, antacids, and the like, of which we already have a surfeit of efficient English makes.—I am, etc.,

Harrogate. J. C. WARD.

Acid Drinks and Sulphonamide Therapy

SIR,—While agreeing that natural fruit acids are oxidized and cannot therefore be suspected of altering the blood acid-base ratio to the acid side. I must protest at the illogical attitude taken regarding their administration during sulphonamide therapy. It is not enough to continue the fashion of prescribing fruit juice drinks on the lame excuse that they do no harm. It is abundantly evident from others' as well as my own clinical experience that thorough alkalization to the extent of rendering the urinary reaction alkaline is the surest method of obviating toxic reactions such as crystalluria, focal nephritis, haematuria, etc. The greatest risk of renal complications attaches to sulphapyridine, sulphadiazine, and sulphathiazole. At a urinary *p*H of 8 the solubility of these sulphonamides is approximately 2.2, 11, and 8.5 times as great as when urinary reaction is *p*H 5 to *p*H 6.[1]

The obvious method of ensuring the necessary alkalization of the patient is the liberal exhibition of easily assimilable alkalis in the form of sodium bicarbonate, carbonates, phosphates, and citrates (where there is good tolerance to the last) in physiological proportion.—I am, etc.,

Bognor Regis, Sussex. ARTHUR A. BRADLEY.

REFERENCE

Med. Res. Cncl. War Memo. No. 10, 1945, pp. 12, 21, London.

Local Penicillin and Endaural Cortical Mastoidectomy

SIR,—Endaural mastoid surgery—i.e., mastoid surgery performed through incisions in and about the external auditory canal and meatus—is gaining in popularity. Advantages of the method as contrasted with the post-aural approach include less haemorrhage and post-operative pain, speedier convalescence, and almost complete absence of scarring. The exposure obtained is such as to permit uncovering of the lateral sinus and dura mater, removal of the mastoid tip if desired, and complete exenteration of the mastoid cells in all except perhaps the most cellular mastoids.

In endaural cortical mastoidectomy as usually described a wedge of skin is excised at the posterior and superior aspects of the external auditory meatus; this "window" is left open for post-operative drainage and heals in a few weeks. I have employed the following modification successfully in some dozen cases. The incision—which is extracartilaginous—is made parallel to and a millimetre or two behind and above the posterior and superior borders of the external auditory meatus respectively, and upwards along the root of the helix for about 1 cm.; the lower part of the incision is made down to bone, the upper part down to temporal muscle. The periosteum over the mastoid process and posterior zygomatic root is elevated, retractors placed, and the bone operation performed as usual. The external auditory canal is not disturbed.

At the conclusion of the bone operation the cavity is filled with a paste of penicillin solution and serum or plasma powder as described elsewhere (Harpman, J. A., *Lancet*, 1946, **2**, 808). The incision is then closed with a few fine sutures and the external auditory canal, concha, and fossa triangularis (the concavity behind the anterior part of the helix) are packed with ribbon gauze. The sutures are removed in about one week and the pack omitted a few days later. The stenosis of the external auditory canal fre-

quently observed after cortical mastoidectomy performed by the post-aural route has not been found following this endaural technique. The lesion in the cases in question was acute or subacute mastoiditis; the ear drums and wounds were healed within a week of operation.

Convalescence appeared to be aided by pre- and post-operative systemic penicillin treatment.—I am, etc.,

Warwick. J. A. HARPMAN.

Treatment of Acute Mastitis

SIR,—From the beginning of August until the end of October I encountered twelve cases of acute mastitis in thirty-two consecutive midwifery cases of which half were confined at the local maternity hospital. Cases showed evidence of acute inflammation of a breast from the 7th to the 21st day after confinement, local inflammation, high fever, and rigors. All cases except two resolved without surgical interference with penicillin *cum* stilboestrol therapy: 100,000 units twice daily and stilboestrol 1 mg. orally t.i.d. 600,000 units was administered in nine cases, 1,000,000 in one case. In the two remaining cases evidence of abscess was evident on the 3rd day of treatment. Both were dealt with surgically, and penicillin was continued until temperature and local condition indicated that inflammatory mischief was well controlled. These too received 1,000,000 units.

Occurring so late the infection was deemed to be not of haematogenous origin, while on the other hand careful investigation failed to reveal evidence of case-to-case infection. Moreover, inquiry in domiciliary practice showed that cases were common in the district in the practices of different midwives. The contingency of the epidemic is therefore difficult to explain.

The following preventive treatment appears to have been successful, as no case has occurred in my practice since it has been carried out as routine. The nipple is cleansed with warm normal saline and dried with sterile cotton-wool. It is then smeared thinly over with fresh penicillin cream. I have great hopes that many cases of mastitis can successfully resume breast feeding after treatment has been successfully completed, but so far I have failed to persuade any mother to make the attempt.—I am, etc.,

Fraserburgh, Aberdeenshire. J. MACLEOD.

Poisoning by "Lethane" Insecticide

SIR,—In the article by Dr. C. V. Harrison (May 24, p. 722) the composition of lethane 384 special is given as: "12.5% of lethane 384 (N-butyl carbitol thiocyanate), 37.5% of lauryl thiocyanate, [etc.]." So far as my information goes this is incorrect. I believe the composition to be (as stated in the paper by Prof. Buxton and myself in the *Journal* of April 11, 1942, p. 464) as follows: 12.5% N-butyl carbitol thiocyanate (or, alternatively, *beta*-butoxy *beta'*-thiocyano diethyl ether), 37.5% *beta*-thiocyanoethyl laurate, 50% refined paraffin.

The main constituent (β-thiocyanoethyl laurate) was not investigated by Cameron, G. R., Doniger, C. R., and Hughes, A. W. M. (1939), *J. Path. Bact.*, **49**, 363, but some data regarding its toxicity to mammals are given by Main, R. J., and Haag, H. B. (1942), *Industr. Med.*, **11**, 531. The M.L. doses found for intraperitoneal and subcutaneous injections to guinea-pigs and rats were 1.48 and 4.3 ml./kg. These figures fall into the range given for lauryl thiocyanate, and the error (if it be such) does not necessarily invalidate Dr. Harrison's conclusions. Nevertheless it may be well to publish this correction unless he has information that the composition of lethane special has been changed.—I am, etc.,

London, W.C.1. J. R. BUSVINE.

"Tuberculous"

SIR,—I should like to draw attention to the all too frequent and improper use of the word "tubercular" when "tuberculous" is what is really meant. "Tubercular" is a general term used to describe any condition characterized by rounded nodules—for instance, a new growth—and exostoses might be described as tubercular in appearance when they are nodular. "Tuberculous" has a limited and special application; it is the adjective which should be used instead of "tubercular" to describe a condition due to tuberculosis. One should say a tuberculous (not a tubercular) lesion, a tuberculous (not a tubercular) abscess, when it is intended to convey that these conditions are due to tuberculosis. The distinction may appear to be meticulous, but precision in language makes for clarity of thought and exposition, and the reader of an article is entitled to expect this from the writer.—I am, etc.,

London, W.14. J. M. HAMILL.

Sir Joseph Barcroft and Drugs in Asphyxia

SIR,—I am sorry that my paper on the use of drugs in asphyxia appeared by some means as a letter in the *Journal* (June 7, p. 825). It was originally prepared for the use of a medical committee in I.C.I., and it was my intention, before it appeared in print, to preface it with a paragraph explaining the part that the late Sir Joseph Barcroft had in its composition. As it stands it might well be the theorizing of a medical scribbler. In fact it was the culmination of a correspondence over many years, and it incorporated several alterations made by Sir Joseph himself. As the matter is one of great practical as well as theoretical importance I think it is only right that it should be known that my "letter" had this authoritative backing. Sir Joseph's letter returning it (with the caveat that he would not personally like to be responsible for giving strychnine to infants) was one of the last he wrote, and I should like to take this opportunity of recording that his interest and help in the work of a general practitioner who did not happen to have been one of his pupils were as keen and as generous as in that of the many research workers who did have that privilege.—I am, etc.,

Winsford, Cheshire. W. N. LEAK.

State Medical Service in New Zealand

SIR,—In response to Sir William Fletcher Shaw's letter (May 31, p. 782) I would point out that my quotation from Mr. Porritt's article in *St. Mary's Hospital Gazette* contained the whole of his comments on medical service. I must dissent from Sir William's description of *St. Mary's Hospital Gazette* as "almost a private publication"; Sir William will find a copy, I believe, in every medical library. That Mr. Porritt's article was not intended to be a private communication is perhaps shown by the introduction to the paragraph on medical services, which runs as follows:

> "This leads me to a few words on things medical in New Zealand. For ten years the country has had a partial State medical service and a dispassionate appraisal of this is perhaps not without interest at the present juncture in this country."

I would also point out that Mr. Porritt, as a native of New Zealand, would perhaps be in a better position than Sir William to appraise the present position in New Zealand as compared with that position when he left the country 23 years ago. But it so happens that Mr. Porritt's conclusions, to which Sir William takes exception, are strongly fortified by a much fuller exposition furnished by Mr. Douglas Robb in a recent little book, *Health Reform in New Zealand*, sent to me for review. Mr. Robb is a distinguished consulting surgeon, a member of the Council of Auckland University College and of the New Zealand Medical Council. He criticizes the absence of arrangements for postgraduate teaching and research. He remarks that the "impetus for introduction of the State service was a political one and the conception of the details of the service was almost 100% political—few medical men appear to have been consulted as such." While recognizing the increased financial prosperity of general practitioners, he states his belief that "the service has been accompanied by a steady demoralization of the profession." His sense of general dissatisfaction with the present medical position is summed up in his request, to urge which is the real purpose of his book, for "the appointment of a Health Service Commission to inquire into all the aspects of the subject, with a view to plans for the future." This suggestion is of particular interest to me as I begged the Prime Minister in a Parliamentary Question (*Hansard*, Jan. 21, 1941) to appoint a Royal Commission which would take evidence from all sections of the community concerned with the Health Service before any definite steps were taken which would revolutionize existing arrangements. This request was refused, but was repeated later by the Negotiating Committee of the medical profession, and again refused.—I am, etc.,

House of Commons. E. GRAHAM-LITTLE.

Ethics of Government's Advisers

SIR,—Examples of interference at a distance with the general practitioner's recommendations regarding the diet of his patients have been published from time to time in the medical and lay Press. We have been assured by Government spokesmen that lay interference—i.e., refusal to grant extra items of diet by the local food office staff—may be overcome by reference of individual cases to the Ministry, when each case will be examined by the Government's panel of medical experts, whose decision, again taken at a distance, is apparently irrevocable. It has also been pointed out that interference from a distance occurs in the provision of surgical corsets. Here the Board of Trade is the culprit in the first instance, and certain medical advisers of the Ministry of Health or the Department of Health for Scotland in the second.

Now it is a generally accepted ethical principle in our profession that we do not give opinions on other practitioners' cases unless we are invited to do so, and then only after examining the patient. It would appear, therefore, that there is a *prima facie* case against these medical experts or advisers, whatever they call themselves, of unprofessional conduct. Unless of course the changing face of Britain, with emphasis on the encouragement of dishonesty and immorality, has been accompanied by a corresponding change in the ethical standards so long and so rigidly upheld by the General Medical Council.—I am, etc.,

Denham, Bucks. EUSTACE SHIPMAN.

POINTS FROM LETTERS

Wrong Use of Power

Dr. ELSIE M. CHUBB (Capetown) writes: "I was much impressed at the stencilled copies sent out during the ban on the weekly Press, and was rather surprised at the lack of initiative shown by so many others who merely accepted it. The appearing of the truncated *B.M.J.* was a very valuable protest against wrong use of power by the Government.

William Blake Psychologized

Dr. E. WEATHERHEAD (Southborough, Kent) writes: I suggest that if poor Blake is to be "psychologized" he should also be "physiologized" and "pathologized." Had he lived in these days he would certainly have been "hospitalized." . . .

A Demobilized Doctor

"M. D." writes: Anticipating the happy occasion next year of the jubilee of the R.A.M.C., may one suggest an additional small function for that body and its R.N. and R.A.F. counterparts? The very worthy appeal on behalf of needful families of deceased members and ex-members with which you deal in your current number may, I think, be supplemented by one—not definitely of monetary aspect—on behalf of the ex-members themselves. It is one for a little help and advice to those of them who meet with difficulties in their search for civilian occupation after demobilization. A case in point is that of a man of 35 who, after his long service, mostly abroad, did his hospital course and then got ill. General practice is barred because of poor health, but research work is avidly sought for by this earnest worker. He has failed to obtain such employment after many inquiries. Perhaps he is on the wrong line, and possibly one of your kind readers could set him right.

Attempted Suicide

Dr. W. H. BRYCE (St. Andrews) writes: Referring to the article in the *Supplement* of May 17 (p. 103) on "The Law Relating to Attempted Suicide," it may be of interest to know that in Scots law attempted suicide is not a crime *per se*.

Experiments on Human Beings

Messrs. L. G. TRIDGELL, P. SAUNDERS, and H. GARLING (London, S.E.22) write: Lest Dr. Louise Fraser's letter published in your issue of May 31, p. 785, should lead others to assume that all experiments on human beings are unethical may we, as three of some forty conscientious objectors who took part in several experiments for periods up to five years, state that we were under no sort of external compulsion to participate; nor, having started, were we compelled to continue any longer than we thought fit. We have as yet insufficient experience of what happens in jail.

Obituary

NOAH MORRIS, M.D., F.R.C.P.

Noah Morris, Regius Professor of Materia Medica at Glasgow University since 1937, died in Glasgow on June 1 at the early age of 53. By his untimely death the Glasgow medical school has lost one of its outstanding personalities at the height of his achievements. A native of Glasgow, Prof. Morris graduated B.Sc. with special distinction in physiology in 1913, M.B., Ch.B. with honours in 1915, and for his M.D. thesis in 1921 he was awarded the Bellahouston Gold Medal. He also held the degree of D.Sc. and the D.P.H. He was elected a Fellow of the Royal College of Physicians of London in 1943, and had been a Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow since 1921.

Morris had been interested in physiology and biochemistry since his early days, and after a period as assistant and later demonstrator in the department of physiology, under the late Prof. D. Nöel Paton, he was appointed professor of physiology in the Anderson College of Medicine, while at the same time carrying on a general practice. In 1928 he was offered, and accepted, the newly created University lectureship in pathological biochemistry, with which was combined the post of biochemist to the Royal Hospital for Sick Children, Glasgow. Here he laid the foundations of his reputation as a teacher and investigator. He published many papers on metabolic problems, particularly with reference to disturbance in acid-base balance and the metabolism of calcium, phosphorus, and fat. He frequently read communications to the meetings of the Association of Physicians and the British Paediatric Association, and at the same time he inspired much of the research done by the other members of the hospital staff.

Prof. Ralph Stockman, who died at the age of 85 only last year, had been appointed to the chair of materia medica in 1897. He resigned in 1936, and Dr. Morris succeeded him as the Regius Professor of Materia Medica. In the years which have elapsed since then he has more than maintained the high traditions of the chair. This appointment also carried with it the post of physician in charge of medical wards at Stobhill General Hospital—an innovation at the time but one which rapidly proved itself. Gathering about him a band of young and enthusiastic workers, Morris built up a department which soon became noted for the high standard of its teaching and for the vigorous research which went on under his leadership. Not content with this, Morris also achieved a high reputation as an administrator, and during the past two years his onerous duties as convener of the Committee of Postgraduate Medical Education were undertaken with his customary energy and enthusiasm. Indeed it is only a few short weeks since he ceased work. Following an operation, his health seemed to improve, but the nature of his illness meant that his days were numbered, a fact which he faced with admirable courage.

As a colleague, Morris was characterized by his loyalty to his friends, his sound judgment, and his honesty of purpose. Although accustomed to speak his mind freely, he had few, if any, enemies, and as a regular attendant at medical meetings he would always be found the centre of a jovial group discussing the events of the day. He was widely read and well-informed and the pleasure he got from these talks was more than equalled by the pleasure he gave to others. He was respected and loved by undergraduates. Not only was he a clear and forcible lecturer but he had a great sense of humour, which students were quick to appreciate.

Morris's life was cut short at a tragically early stage and we mourn his loss. He lived his life to the full and he died as one would have expected—courageously and without complaint. We extend our deepest sympathy to Mrs. Morris, who shared with him his enthusiasm and was proud of the success he had achieved, and to his son and daughter.

Sir Alexander Macgregor writes: I trust you will allow me to pay a tribute to the memory of the late Prof. Morris, my old friend and adviser in municipal hospital affairs. His dual appointment to the university chair of materia medica and as a physician to Stobhill Hospital was a happy event in the

history of medicine in Glasgow, and he was happy in it, for he at once established himself as a teacher of his subject in the classroom, and as an exponent of humanistic medicine in the wards of the hospital. In both spheres his intellect and his strength of character and of purpose gained for him an ascendancy and influence in local and national affairs to which few attain. But it was not on this account alone that he won the esteem and unbounded affection of his colleagues and students. It was well known to his friends that his supreme interest in life was in his fellow-men and in the interplay of personality, and I know that he would have liked this to be said of him. He made and retained friends in every walk of life; he made friends of his students, and was content only with the best they had to give, watching over their progress through the university and in after life. In his work as a physician and scientist, he was quick to seize every opportunity to advance his subject and to encourage and even constrain others to join in the search for truth, infecting them with his own enthusiasm. I should acknowledge with gratitude Prof. Morris's services to public health and the deep interest he took in the relations between clinical and preventive medicine. I was constantly indebted to his wise advice on our city hospital problems before and during the war. Had he lived he would have played a prominent part in the new health service.

Medical Notes in Parliament

APPOINTED DAY

On June 9 Mr. VIANT asked when it was intended to bring the rest of the National Insurance schemes and the English and Scottish National Health Service schemes into operation.

Mr. ATTLEE replied: "The preparatory work necessary to arrange the transition from existing schemes and agencies and to create the organization to operate the new provisions effectively is very heavy. Considerable progress has been made with these preparations despite great difficulties of staff and premises. The various schemes are closely linked up with each other and with proposals for completing the break-up of the Poor Law and providing a comprehensive scheme of national assistance standing behind the insurance provisions. The Government consider that there are compelling reasons in favour of bringing all these schemes into operation on the same date. They have reached the conclusion that by giving high priority to the legislation which it is hoped to introduce next session to complete the break-up of the Poor Law, this will be possible. On a consideration of all the factors involved they have decided that the best date for this purpose is July 5, 1948, which coincides with the end of the next contribution year for health, pensions, and unemployment insurance."

NATIONAL SERVICE BILL

The Second Reading of the National Service Bill was moved in the House of Lords on June 3 by Lord HALL. He said that for the period provided in the Bill some 200,000 men would regularly be called up for twelve months' full-time training, with reserve training covering a further period of four years. The main object of the Bill was to prevent war.

The Archbishop of YORK said the reduction of service from eighteen months to twelve would probably enlarge the number of recently conscripted men who had to serve in Germany. In the British Zone of Germany there were several million young women in excess of the number of men. Some of them, because of the circumstances of the Hitler regime, were oversexed. Inquiries by the medical authorities would show the result of the temptations to which these boys were subjected. He pleaded that conscripts should be kept in England a considerable time before being sent to Germany. Temptation often took place in the first weeks.

Incidence of Venereal Disease

Lord MORAN doubted the wisdom of recruiting by compulsion or of leaving to soldiers the decision on the numbers required. The experience when they pressed for the demobilization of doctors did not encourage them to give the Army a blank cheque in this matter. The decision about conscription would really be made when they knew the real potentials of the atomic bomb and bacterial warfare. There were great risks in employing conscripts overseas. In September of last year, in our Army in Japan, of every 1,000 men 228 had venereal disease. In another command alongside, 600 out of 1,000 had venereal disease—more than half. In Germany at the same time the figure was 185 out of 1,000; in Austria and Italy 168 out of 1,000; and in Burma and Malaya 141 out of 1,000. The figure in the Middle East was 31 out of 1,000. The reason for that lower figure was that there was really no mixing between the Army and the civil population. Those figures might alter from time to time, but were substantially the same now. The figure for the Army at home was 33 in every 1,000. That was very much higher than usual; it was generally in the neighbourhood of about 12. He was told that the figure for syphilis worked out at about 5 to 6 per 1,000 among the civil population. They had the same prevalence of venereal disease in 1919, after the first German war when similar conditions prevailed. Then the figure was 150 out of every 1,000 in the Army of the Rhine; while in the American Army in September of that year, of all the white American troops in Germany and France, 859 out of every 1,000 had venereal disease. He quoted from Volume XV of *Medical and Casualty Statistics*. Absence from home was the factor which led to this high incidence of venereal disease. The longer a conscript was away from home the higher rose the rate and incidence of the disease. These figures lent no support to the Prime Minister's idea that the Army was a people's university.

Lord NATHAN said he had been staggered by the figures of venereal disease given by Lord Moran. He suspected Lord Moran had taken the figures for treatments instead of those for cases. The highest figure for the United Kingdom forces for the third quarter of 1946 was 9.6 per 1,000, and the lowest was for the latest quarter, 5.3 per 1,000. In the British Army on the Rhine the highest figure was the third quarter of 1946, 44.6 per 1,000, and the lowest figure, the last quarter, 30 per 1,000. In the C.M.F. the largest figure was 39.5 per 1,000 in the second quarter of 1946, and 22.8 per 1,000 was the lowest figure—being the figure for the first quarter of 1947, based upon January and February only. In the M.E.F. the highest figure was 9.4 per 1,000 for both the second and third quarters of 1946, and the lowest was 4.1 per 1,000 for the first quarter of 1946. In S.E.A.L.F. the highest figure was 37.6 per 1,000 for the first quarter of 1946, and the lowest figure 31.2 per 1,000 for the first quarter of 1947, based upon January and February only.

Lord MORAN said he had quoted from A.M.D.5 Statistics, September, 1946. The figure of 228 per 1,000 which he had given had nothing to do with treatments. It meant 228 on an annual rate. These figures had been given officially by the Army Medical Department.

Lord NATHAN said there was no disagreement that venereal disease had to be dealt with properly and promptly. General McCreery, Commander in Chief of the British Army on the Rhine, had devoted time and labour to put this right. But on the whole they must rely for conduct abroad on what these young men learnt at home.

The Bill was read a second time and referred to a Committee of the whole House.

SCOTTISH UNIVERSITIES

On June 3 Mr. RANKIN discussed admissions to the Scottish Universities. He said that last November Mr. Dalton stated that for the session 1945–6 there were 6,440 applications for admission to the four Scottish universities but that almost 50% of these candidates, although equipped to benefit from a university education, had not been admitted. The raising of the school-leaving age would create a need for something like 15,000 new science teachers in secondary schools. This was a demand which the universities as a whole must meet. The number of students in Great Britain had risen by 32% since the war, but in Scotland by only 28½%. Scotland ought to contribute 5,000 or 6,000 to the extra graduates required, but last year the number who graduated in pure or applied science from Scottish Universities was 460. When they added the numbers in medicine and arts it seemed clear that the obligations which would be placed upon Scotland would not be met. He suggested the solution of the problem lay in founding another university. Claims to this had been made from Dundee, Oban, and Dumfries, but he favoured Inverness.

Mr. GLENVIL HALL said Scotland was not alone in having crowded universities. Other universities were absolutely packed out because 90% of the places had to be reserved for ex-Service men and women. Scotland proposed to increase by 32% the places available for students, raising them from 9,500 to 12,550 and the expectation was that she would be able to crowd in even another 2,000. There were limiting factors which would prevent the Government from initiating the building of another university. It could not undertake to find building labour or material nor would there be the teaching staff at the

present moment. Where buildings could be easily converted extra places could be found for students. Recurrent grants for all purposes given to universities were: Aberdeen £158,000, Edinburgh, £255,200, Glasgow University £305,550, Glasgow Royal Technical College £37,000, and St. Andrews University, including Dundee, £162,050. In addition capital grants for building and equipment had been allocated to a total of £172,100, and additional grants of £15,000 to Edinburgh and £80,000 to Glasgow had still to be approved. Grants to Scottish teaching hospitals attached to the universities amounted to £159,550, out of £500,000 allocated to this purpose.

Services Medical Examinations

Mr. HUGH FRASER asked on June 4 what steps the Minister of Defence was taking to bring the medical examination and documentation of all ranks of the British forces, especially in regard to pulmonary and dental *x*-ray, into line with modern practice in the U.S. and late German armed forces.

Mr. ALEXANDER replied that up-to-date methods were already used in all three Services. Medical examinations in the Navy included miniature radiography of the chest when a person was entered, or as soon as practicable afterwards, and thenceforth periodically so far as staff and equipment allowed. A "follow up" system included full-scale films and special observation in hospital of doubtful cases. The number of dental *x*-ray machines had recently been considerably increased so that all essential *x*-ray examinations could now be carried out. Over 90% of Army recruits were examined by mass radiography to detect primarily the presence of pulmonary tuberculosis. As soon as enough staff and equipment were available all recruits would be so examined. Facilities were available for dental *x*-ray for diagnosis and treatment. In the Royal Air Force all recruits had a chest *x*-ray as a routine. Further chest *x*-rays, and also dental *x*-rays, were arranged as required. The facilities would be developed further as and when skilled personnel became available. In general, routine dental *x*-ray examination and documentation of all personnel was not regarded as justifiable, having regard to the present resources of the country. An inter-Service Committee on medical documentation had recently been appointed to consider the possibility of introducing a common system for the three Services, on the most up-to-date lines, bearing in mind war experience not only in this country but also in Germany and the United States.

Medical Certificates

On June 5 Mr. JOHN MORRISON invited the Minister of Health to give a list of all the certificates required by Government Departments which a doctor may be called upon to sign on behalf of a patient.

Mr. BEVAN in reply said that according to his present information medical certificates may have to be produced by patients (or their personal representatives) to Government Departments under the following enactments or for the following purposes. This list was not necessarily exhaustive.

1. Under the Births and Deaths Registration Acts, 1836–1926, e.g., to certify cause of death to the registrar.
2. To assist in determining a claim to war pension or allowance.
3. Under the Lunacy and Mental Treatment Acts and the Mental Deficiency Acts.
4. In support of claims to benefit under the National Health Insurance Act, 1936, and the Contributory Pensions Acts, 1936–41.
5. In support of sick absence by a Government Department as employer.
6. Under the Blind Persons Acts, 1920 to 1938, to support an application for old age pension at 50.
7. Under the Essential Work Orders, Control of Employment (Directed Persons) Order, 1943, and Control of Engagement Orders in support of a claim to leave or change the employment.
8. Under the Road Haulage Wages Act, 1938, the Catering Wages Act, 1943, and the Wages Councils Act, 1945, in support of a permit to be employed at substandard wage rates.
9. Under the Coal Distribution Order, 1943, and the Control of Fuel (Restriction of Heating) Order, 1947, to obtain additional supplies of fuel and exemption from heating restrictions.
10. Under the Disabled Persons (Employment) Act, 1944, for registration.
11. Under the Corsets (Manufacture and Supply) (No. 14) Directions, 1946, to assist in obtaining surgical corsets.
12. Under the Welfare Foods Order, 1946, to enable expectant mothers to obtain food benefit.
13. Under the Rationing Orders or otherwise to enable invalids to obtain special authority for supplementary rationed food and to assist invalids, expectant mothers, and others to obtain special treatment with regard to goods which are the subject of Government control.
14. Under the Control of Motor Fuel Orders to assist claimants for additional petrol allowances on medical grounds.
15. Under the National Service Acts, 1939–47, in support of a claim for exemption from, and to justify failure to comply with, provisions of the Acts.
16. Under the Cremation Act.

Rubella.—Mr. HASTINGS on June 5 asked the Minister of Health whether, in view of the increasing birth rate and the clear evidence that German measles in the mother could produce serious defects in the unborn child, he would make this a notifiable disease, so that precautions could be taken to prevent its spread. Mr. BEVAN replied that the effects of this disease in pregnancy were being investigated in conjunction with the Medical Research Council. He preferred to await the results of this investigation before considering the matter further, and he invited Mr. Hastings to furnish his evidence.

Medico-Legal

A STERILIZED HUSBAND

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

We noted in our issue of Jan. 18 (p. 118) the decision of the High Court in *J.* v. *J.*[1] rejecting the petition of a wife for a decree of nullity on the ground that just before the marriage her husband had himself sterilized by vasectomy. Mr. Justice Jones found that this act amounted to wilful refusal to consummate the marriage, but he rejected the wife's petition on the ground of acquiescence: she had signed before marriage a statement that she fully understood and realized that the operation produced total and irremediable sterilization. The Court of Appeal has now reversed that decision and granted the wife's petition.[2]

Lord Justice Somervell, reading the judgment of the court, agreed with the judge's statement of the law but disagreed with his finding that the wife had acquiesced in the sterilization. The principle, he said, had been established by *Cowen* v. *Cowen*[3] that a marriage was not consummated if a husband, by his own act in insisting on using a contraceptive, prevented sexual intercourse from having its natural consequence. The husband in the present case had effected by an operation what could have been effected by the use of a contraceptive on each successive occasion. By his act in submitting to the operation he had rendered himself incapable of effecting consummation. When the couple had been engaged for some months the wife had refused to sign the statement required by the doctor as a condition of performing the operation. She had ultimately consented to sign on the husband's promise to postpone the operation until after the marriage, for she had hoped to be able to persuade him to a different view. In spite of his promise he had undergone the operation before the marriage, and she had not known this until some six weeks before it. Her knowledge was not in law an absolute bar to her petition, and the question remained whether the petition should be dismissed in all the circumstances, including her knowledge, for lack of what was called "sincerity." The marriage had taken place in June, 1934; she had not known until late in 1945 that she might have grounds for a decree of nullity, and she had then left her husband and filed her petition. Lapse of time was no bar until a party knew both the facts and his or her legal rights. The judge was wrong in dismissing the petition because of the wife's knowledge before marriage. That knowledge had not existed at the time of the engagement; it had been sprung on the wife a few weeks before the date of the marriage, and would not have been an easy reason for her to give for breaking off the marriage. She had felt that it was too late to draw back. In all the circumstances the court did not think that the petition should fail for "insincerity." The question of wilful refusal to consummate the marriage did not arise; the husband's incapacity was a sufficient reason for a decree of nullity, which the court pronounced.

[1] (1946) 2 All E.R. 760.
[2] *The Times*, May 24.
[3] (1946) P. 36.

No. 21

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended May 24.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	65	5	30	2	2	67	6	24	1	—
Deaths		—	—				1	2		
Diphtheria	197	20	61	28	6	371	26	74	34	9
Deaths	5	1	—	—	—	7	1	—	1	—
Dysentery	47	10	15	—	—	200	16	45	1	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	—	—	1	1	—	5	—	—	—	—
Deaths		—					1			
Erysipelas			33	9	4			52	4	—
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				23					22	
Deaths	76	12	11	8	1	52	5	5	11	4
Measles*	12,830	548	141	82	21	3,287	1034	674	24	5
Deaths	6	—	—	—	—	1	—	4	—	—
Ophthalmia neonatorum	61	—	13	—	—	75	7	14	2	—
Deaths										
Paratyphoid fever	6	1	3 (B)	—	—	—	—	1 (B)	—	—
Deaths	—	—	—	—	—	1	—	—	—	—
Pneumonia, influenzal	557	41	2	4	5	557	24	6	3	3
Deaths (from influenza)†	9	—	2	—	—	7	1	—	—	1
Pneumonia, primary		25	186	20	8		26	218	28	4
Deaths				5					7	
Polio-encephalitis, acute	2	—				—	—			
Deaths		—					—			
Poliomyelitis, acute	11	1	—	6	—	9	1	1	1	—
Deaths		—					—			
Puerperal fever		2	11		—		3	17		—
Deaths										
Puerperal pyrexia‡	135	7	12	—	—	151	16	11	1	—
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	982	89	141	23	43	1,089	100	143	18	26
Deaths	—	—	—	—	—	—	—	—	—	—
Smallpox	8	—	—	—	—	8	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	3	—	4	3	1	8	—	3	2	1
Deaths	—	—	—	—	—	1	—	—	—	—
Typhus fever	—	—	—	—	—	1	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,879	226	196	50	16	2,075	182	69	30	22
Deaths	15	2	2	2	2	15	4	—	—	1
Deaths (0–1 year)	416	51	57	25	9	378	53	56	27	13
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,402	655	615	170	111	4,635	660	636	183	113
Annual death rate (per 1,000 persons living)			12·8	10·7				14·0	11·7	
Live births	10,169	1568	1261	488	295	8,976	1414	1062	423	308
Annual rate per 1,000 persons living			25·4	30·8				21·4	27·1	
Stillbirths	261	32	36			249	35	52		
Rate per 1,000 total births (including stillborn)			28					47		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

EPIDEMIOLOGICAL NOTES

Smallpox

Contacts are still under surveillance in connexion with the outbreaks at Barnsley C.B., Bilston U.D., and Coseley, U.D. A first case in Wakefield C.B. was detected on June 4.

Barnsley.—There have now been 15 cases with 3 deaths in persons aged 75, 72, and 70 years. Of these cases 9 were in the second generation and 1 is probably in the third generation. The common lodging-house where the disease first appeared and its occupants have been disinfected terminally but have remained under surveillance since the last case was removed on June 4. This man had refused vaccination until June 3.

St. Helen's Hospital, from which the last case was removed on May 29, is now empty. Patients and staff from the affected ward have been transferred to a ward set aside for their reception at the Infectious Diseases Hospital. Other patients have been discharged home under surveillance and the hospital is now being disinfected.

The situation at Barnsley is reasonably satisfactory apart from two disquieting features. (1) A child aged 11 was admitted to St. Helen's Hospital on the night of May 15 for tonsillectomy. Operation was postponed and she was discharged the following day. The parents refused vaccination. The child is said to have become ill on May 21 and developed smallpox rash on May 26. She was not removed from her home until May 29 and while ill in bed there received a number of visitors who are now under surveillance. (2) A man who had refused vaccination absconded from the common lodging-house and walked to Darton, a suburb of Barnsley. He returned to Barnsley by bus on May 29 and was removed to the smallpox hospital later that day. He says his rash appeared on May 28. Although many of his contacts have been traced some of them may not be under observation.

Bilston.—Two further cases have been reported recently. The fourth member of the family mentioned last week (June 7, p. 831) was removed on June 2. She is 12 and was vaccinated in infancy and re-vaccinated unsuccessfully on May 17, the day after her sister died. Further re-vaccination on May 23 gave a good take, but she developed a modified smallpox rash on June 2 and was removed to hospital immediately. Her mother, another case in the same generation with onset on May 29, died on June 5. The second case, a teacher at Villier School, aged 39, was vaccinated in infancy and removed on June 4 (onset June 1, rash June 4) from a previously unaffected household.

Coseley.—There have been no further cases in this district. Contacts in two households remain under surveillance and further cases if any should crop during the week ending June 14.

Wakefield.—Here a man aged 71, vaccinated in infancy, became ill on May 31 and was removed on June 4. The date of the rash is uncertain but the clinical state suggests that it appeared about June 2. The man is one of 45 permanent residents in the model lodging-house, 62, George Street, Wakefield, but was employed as night watchman at the corporation's electricity works. There is evidence that no casual vagrants stayed at the lodging-house but passers-by frequently sat with him by his fire at work during the night.

Sheffield.—The last of 3 cases (in two generations) was removed on May 21. Surveillance of contacts has now ceased and the patients are awaiting discharge.

Discussion of Table

In *England and Wales* there was a fall in the notifications of whooping-cough 241, diphtheria 46, scarlet fever 46, and dysentery 18. There was an increase in the incidence of measles 152.

The decline in the number of cases of whooping-cough was produced by a few counties, the largest falls being Yorkshire West Riding 92, Middlesex 48, Lancashire 42, London 37. The only changes of note in the returns for diphtheria were decreases in Durham 12 and Northumberland 10. The recent small rise in the incidence of diphtheria in Lancashire has increased the proportional importance of the returns of this county, and during the week one-third of the total notifications were recorded from Lancashire.

Only small changes occurred in the local returns of scarlet fever. The increase in the notifications of measles represents the balance of the conflicting trends: increases were recorded in Essex 291, Yorkshire West Riding 208, Kent 191, and Worcestershire 137; there were decreases in Glamorganshire 201, Staffordshire 150, and Derbyshire 142. Lancashire had 16 and London 10 cases of dysentery. Cases of smallpox were recorded from Staffordshire, Bilston M.B. 1, Coseley U.D. 1; Lincoln-

shire, Grimsby C.B. 2; and Yorkshire West Riding, Barnsley C.B. 3, Sheffield C.B. 1.

In *Scotland* the only marked changes in the notifications of infectious diseases were decreases in measles 45 and whooping-cough 35. In the Western Area a fall was recorded in the incidence of cerebrospinal fever 9, and of diphtheria 12.

In *Eire* the notifications of diphtheria increased by 13, while a fall occurred for scarlet fever 11 and whooping-cough 13. The rise in cases of diphtheria was mainly due to an increase in Dublin C.B.

In *Northern Ireland* the trends of the various infectious diseases remained practically unchanged.

Week Ending May 31

Notifications of infectious diseases in England and Wales during the week included: scarlet fever 886, whooping-cough 1,657, diphtheria 194, measles 12,314, acute pneumonia 512, cerebrospinal fever 3, dysentery 46, acute poliomyelitis 18, smallpox 14, paratyphoid 7, typhoid 1.

Medical News

The annual meeting of the Association of Surgeons of Great Britain and Ireland, 45, Lincoln's Inn Fields, London, W.C.2, will be held at the School of Geography, Mansfield Road, Oxford, on Thursday, Friday, and Saturday, July 3, 4, and 5. The programme is as follows: July 3, 9.30 a.m., business meeting; 10 a.m., discussion on "The Surgical Relief of Pain (excluding Sciatica)," to be opened by Mr. J. H. Kellgren, Dr. W. K. Livingston (U.S.A.), Prof. J. Paterson Ross, and Prof. Geoffrey Jefferson; 12.30 p.m., short paper by Prof. L. J. Witts, "Splenomegaly"; 2.15 p.m., discussion on "The Modern Treatment of Toxic Goitre," to be opened by Mr. Geoffrey Keynes, Prof. H. P. Himsworth, Mr. T. A. Hindmarsh, and Dr. Oliver Cope (U.S.A.); 4 p.m., short paper by Prof. J. R. Learmonth, "The Results of Treatment of Traumatic Arterio-venous Fistula." July 4, discussion on "Cancer of the Cardiac End of the Stomach and Lower End of the Oesophagus," to be opened by Mr. P. R. Allison, Dr. L. G. Blair, Mr. T. Holmes Sellors, Mr. Vernon Thompson, and Mr. N. C. Tanner; 2.15 p.m., operating sessions and case demonstrations at Radcliffe Infirmary, Wingfield-Morris Orthopaedic Hospital, and Churchill Hospital, demonstrations of cine-radiographic studies and experimental work in the Nuffield Institute for Medical Research, demonstrations in the Institute of Social Medicine; 5.30 p.m., demonstration by Prof. R. R. Macintosh, "Anaesthesia Applied in Research," clinico-pathological conference at Radcliffe Infirmary conducted by Dr. A. H. T. Robb-Smith. July 5, 9.30 a.m., short papers on "Ano-rectal Fistula" by Mr. C. Naunton Morgan, Mr. E. T. C. Milligan, Mr. O. V. Lloyd Davies, and Mr. W. B. Gabriel; 12 noon, short paper by Prof. H. J. Seddon and Mr. D. M. Brooks, "Results of Nerve Grafting in the Extremities."

A joint meeting of the British Association of Physical Medicine and the Physical Medicine Section of the Royal Society of Medicine will be held at 1, Wimpole Street, London, W., on Wednesday, June 18, at 4.30 p.m., when Dr. P. Bauwens will read a paper on "The Complex Behaviour of High Frequency Current in Simple Circuits." At 6.30 p.m. the annual general meeting of the association will be held at the Royal College of Surgeons of England, Lincoln's Inn Fields, W.C., and will be followed by a dinner at 7 for 7.30 p.m.

A meeting of the London Association of the Medical Women's Federation will be held at Queen Victoria Hospital, East Grinstead, Sussex, to-day (Saturday, June 14), at 3 p.m., when there will be a demonstration of methods of treatment in plastic surgery.

An international short-wave congress will be held at Amsterdam in 1948 on July 19–24. Members of the Board are: Dr. W. Beaumont, London; Dr. A. Gjertz, Stockholm; Prof. Dr. C. Guarini, Naples; Prof. Dr. D. Kobak, Chicago; Prof. Dr. W. Kowarschik, Vienna; Dr. P. Liebesny, New York; Dr. J. Meyer, Paris; Dr. L. Rosa, Budapest; Dr. J. Saidman, Paris; Dr. J. Samuels, Amsterdam; Prof. Dr. F. Scheminzky, Innsbruck; Prof. Dr. E. Schliephake, Würzburg. Those wishing to deliver lectures should communicate with the Secretary, Weteringschans 73, Amsterdam, before April 15, 1948.

An International Cytological Association will be founded at the Cytological Congress to be held in Stockholm on July 10–17. It will be a section of the International Association for Biological Research, which is affiliated to U.N.E.S.C.O.

The report of a conference on catering for the aged and infirm held on Jan. 18 (*Journal*, March 15, p. 348) under the chairmanship of Lord Amulree, has been printed as a pamphlet entitled *Nutritional Problems of Invalids, the Aged, and Infirm*, price 1s. (plus postage), obtainable from the London Council of Social Service, 7, Bayley Street, London, W.C.1.

The board of management of the Hospital for Sick Children, Great Ormond Street, London, W.C., announces that in an endeavour to lessen the time spent waiting in the out-patient department, out-patients will be seen by members of the consulting medical and surgical staff only by appointment. Such appointments should, if possible, be made by a doctor acquainted with the case and preferably by letter. Patients who attend without introductions from a doctor will be examined in the receiving room and only when necessary referred to a member of the consulting medical or surgical staff. Patients will be seen by appointment between the hours of 9.30 a.m. and 12.30 p.m., except on Sundays. The hospital is open day and night for urgent cases.

The National Association for the Prevention of Tuberculosis has decided to offer six scholarships this year, open to doctors and other medical personnel throughout the British Colonial Empire. The successful holders will come to Britain for a period of six months or longer to study tuberculosis in its widest aspects—clinical, administrative, and social. The award will be divided as follows: (*a*) Two scholarships (value £120 each) to registered doctors in the Colonial Medical Service. (*b*) Two scholarships (value £100 each) to medical graduates of native medical schools in the British Colonies. (*c*) Two scholarships (value £80 each) to matrons, nurses, health visitors, or other members of colonial sanitary departments. The successful candidates will be eligible for lodging and training allowances from Colonial Government funds, and the details of their training during the tenure of the scholarship will be supervised by the N.A.P.T. Travelling expenses, purchase of books, and other incidental expenditure will be met by scholars out of their scholarship moneys. Applications should be made through the Colonial Medical Departments, who will forward them to the Colonial Office, which will make recommendations to the Council of the N.A.P.T. An announcement of the method of sending in applications will be made shortly by the Colonial Office.

The King Edward's Hospital Fund for London proposes to offer in the summer a number of bursaries tenable at voluntary hospitals in London. *Hospital Administration.*—Three junior bursaries of the value of £350 a year for men or women aged 20–30, and three senior bursaries without an age limit of the value of £600 a year. *Catering Officers.*—Eight bursaries valued between £300 and £600 a year for men or women. *Domestic Administration.*—Six bursaries for women at the rate of £250 a year, plus board and lodging. Inquiries should be addressed to the Secretary, King Edward's Hospital Fund for London, 10, Old Jewry, London, E.C.2.

In July a new monthly journal will be issued called *The Annals of the Royal College of Surgeons of England* containing reports and lectures which have been recently given in the College. It will also include a diary of the activities and lectures of the College and will be of interest not only to Fellows but also to Members. The annual subscription is 25s., post free; single numbers 2s. 6d., postage extra. Applications should be made to the Editor, The Annals of the Royal College of Surgeons of England, Royal College of Surgeons, Lincoln's Inn Fields, London, W.C.2.

Lord Moran has been appointed Chairman of the Medical Advisory Board of the Alfred Eichholz Clinic, London, which is staffed by blind men and women—qualified physiotherapists trained by the National Institute for the Blind.

The Minister of Labour and National Service has nominated Mr. G. P. Barnett, one of H.M. Deputy Chief Inspectors of Factories, to be Chief Inspector in succession to the late Mr. H. E. Chasteney.

Dr. Emyr Wyn Jones has been appointed Sheriff for Caernarvonshire for 1947.

Dr. Thomas Munn Body has been appointed a Deputy Lieutenant in the North Riding of the County of York.

Dr. J. M. Cure has been nominated a Member of the Council of Government of the Colony of Mauritius.

The submission of Form T. 147 under the Public Health (Tuberculosis) Regulations, 1940, is no longer necessary for men born between 1916 and 1926, but is required only for those born in the years 1927–9.

Dr. William Hartley Thompson, of Bradford, who died on Dec. 30, 1946, left £55,616. Dr. Walter Charles Aylward, of Tunbridge Wells, who died on Jan. 29, left £15,300. Mrs. Vivien Henrietta Ada Lloyd Laming Evans, widow of E. Laming Evans, C.B.E., F.R.C.S., formerly of Oxted, left £30,781, the residue, after certain bequests, to the Royal College of Surgeons, England, for research in orthopaedic surgery. Dr. Stanley Wyard, of Wimpole Street, W.1, who died on Sept. 29, 1946, left £14,234. Dr. Charles Grant Pugh, formerly Medical Officer of Health for Southend, who died on Dec. 19, 1946, left £23,850. Sir Arnold Lawson, the ophthalmic surgeon, who died on Jan. 19, left £65,078. Dr. Charles Llewellyn Lander, of Maiden Newton, Dorset, and Plymouth, who died on Dec. 25, 1946, left £35,934. Dr. John Young, Bishop's Stortford, Herts., who died on Dec. 20, 1946, left £21,913.

Any Questions ?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Meat Extracts

Q.—*What is the nutritive value of the popular proprietary meat extracts? Is it possible to maintain life on them? Of what real value are they when included in an invalid diet? Also, is there any truth in the popular theory that calf's foot jelly is "very nutritious and strengthening"?*

A.—It is understood that many of the proprietary brands of meat extracts contain, besides the water-soluble extractives of meat, yeast extract and salt for flavouring purposes. Their nutritional value is to-day rated rather differently from a few years ago, because of the discovery that they contain useful quantities of riboflavine and nicotinic acid. These may amount, respectively, to averages of 1 and 30 mg. per oz. (28 g.). Meat extracts contain about 20% each of water and mineral matter—presumably mostly phosphates and sodium chloride. Nothing appears to be known about the non-nitrogenous extractives; possibly they consist of soluble break-down products of glycogen. The nitrogenous extractives have been more fully studied. Peptones and similar compounds ("albumoses") amount to about 15% and are probably utilized as well as similarly constituted proteins; "meat bases"—creatine, creatinine, carnosine and anserine, glutathione, urea, and ammonia, among others—make up the balance. These bases are believed to account for any effect meat extract may have in stimulating appetite.

Clearly these products, however great their value as adjuvants to invalid diets, are in no sense complete foods. Even if enough could be eaten daily to provide the necessary protein equivalent—about 1 lb. (454 g.)—the deficiency in fat and carbohydrate, in vitamins A and C, and probably in calcium and iron is enough to put them outside any list of single foods that maintain life without supplement; incidentally, there are no such foods. For fuller information, a paper by Rees and Salway (*Chemistry and Industry*, 1947, May 31, p. 302) may be consulted. These authors make no reference to calf's foot jelly. Hutchison and Mottram regard it solely as a very expensive source of gelatin, and say of "jellies" in general that their value to invalids probably depends on their content of sugar rather than of gelatin.

Production of Penicillin-resistance

Q.—*Is there any danger of producing penicillin-resistant organisms in patients with acute infections of the mouth and throat treated with penicillin lozenges?*

A.—The capacity of bacteria to develop resistance to penicillin varies in different species. It is very great in *Staph. aureus* and very small in *Strep. pyogenes*, which is perhaps the most important organism likely to be subjected to the action of penicillin in the mouth and throat. It is also possessed in some degree by *Strep. viridans*. The plain answer to the question is "yes," but the "danger" to the patient himself is remote. The indiscriminate use of penicillin preparations of any kind which are easily and may be casually applied to parts of the body, such as the skin or mouth, which are heavily populated by bacteria is to be discouraged, because such widespread abuse of a potent remedy continued for years may end in breeding widely distributed races of resistant bacteria.

"Susceptibility" to Lousiness

Q.—*There is a widespread belief that some persons are more susceptible to lousiness than others. While it is a fact that some people are more irritated than others by insect bites, is there any justification for the view that the louse tends to select its victims?*

A.—The writer has reared lice for laboratory experiments for several years, and at different times has been assisted for short periods by volunteers (about a score). On none of them did the lice show reluctance to feed. On the other hand, the hosts displayed a great difference in their reaction to bites, many being so severely affected that they were unable to continue. Among naturally infested people one finds great variation in the number of lice present, but in all cases the figure is not great (a dozen or so adults), and is much less than that which would be expected from the known powers of proliferation of the louse. Almost certainly this is due to the louse-killing activities of the infested people. Presumably this is partly dependent on their standards of hygiene, but also on their sensitiveness: individuals who suffer most would tolerate only very small numbers. In the case of fleas and mosquitoes, people who are sensitive are most likely to notice bites and therefore to consider themselves unduly sought after by the insects. With lice, however, it is the insensitive people who are apparently more "susceptible" to attack.

Smithwick's Operation for Hypertension

Q.—*To what extent is Smithwick's operation of lumbo-dorsal sympathectomy performed in this country for the treatment of hypertension? Is this procedure justified in a man, aged 45, with anginal attacks associated with hypertension but otherwise healthy?*

A.—Smithwick's operation (*Surgery*, 1940, **7**, 1) is a very extensive resection of the sympathetic system above and below the diaphragm, first on one side and subsequently on the other. This operation, or others of a similar nature but varying in extent, such as Adson's or Peet's operation, are being performed more frequently in Great Britain. Smithwick himself was able to give a review of a large series of his own cases over a period of five years (*Arch. Surg.*, 1944, **49**, 180), but no comparable series in this country has been published. Each case has to be considered on its merits after thorough investigation. In general in this country the operation is performed only on patients under 50 years of age who have systolic pressures over 200 mm. and diastolic pressures over 100 mm., who are deteriorating in spite of medical treatment, and who show little if any evidence of structural heart disease or renal disease. If the patient in question satisfies these criteria he should be investigated by the cold-pressor and sedation tests, so that the possible response to operative treatment may be gauged.

Chylous Ascites

Q.—*I recently operated on a woman of 25 for inguinal hernia. On opening the sac milky fluid tinged with pink, typical of chylous ascites, escaped, and some 12 oz. (341 ml.) was later removed from the peritoneal cavity. The patient had complained of no other symptom than slight pain in the hernial region. What are the aetiology and prognosis?*

A.—True chylous ascites is due either to injury or to obstruction of the thoracic duct (or receptaculum chyli) or of one of the more important intra-abdominal lymphatics; it is a rare condition apart from filariasis. Chyliform ascites is also uncommon, but may be found in some cases of carcinomatosis, rarely in hepatic cirrhosis, and occasionally in cases of tuberculous peritonitis. The last-mentioned is the more likely cause in this case, for it may occur unaccompanied by any other symptoms.

Premenstrual Mastalgia

Q.—*A woman aged 45 suffers from lumpy and tender breasts every three months or so—about a week before menstruation; the condition subsides after her period. She fears cancer but is unwilling to have her breasts removed except as a last resort. Is stilboestrol worth trying? If so, in what dosage? What other treatment would you recommend?*

A.—The occurrence of discomfort is so infrequent that it would be better to persuade the patient that no treatment other than a well-fitting brassière is necessary. There is nearly always a large element of neurosis in "premenstrual mastalgia," and fear of cancer, as in this case, is a common feature. Reassurance is therefore important. If the patient is not content with this, general measures should be tried before endocrine therapy. The restriction of the intake of fluid and salt for ten days before a period is sometimes efficacious; small doses of thyroid also appear to help. Stilboestrol is used a good deal

in the treatment of this condition, but the results are mostly unsatisfactory. If need be, it might be given in 0.5-mg. doses twice daily by mouth during the time when the discomfort is present. The more usual technique of using it during the first half of the cycle seems inappropriate in this case, since the appearance of the pain is irregular. An alternative is methyl testosterone, 5 mg. sublingually twice daily, for ten days before a period. Finally *x*-ray therapy should be considered.

Yohimbine

Q.—*What is the value of yohimbine? How is it given, in what dosage, and are there any contraindications to its use?*

A.—When yohimbine is given by mouth or hypodermically in moderate doses it produces a general vasodilatation in the skin, the mucous membranes, and particularly in the sexual organs; in consequence it produces erection. It does not stimulate the production of spermatozoa or sexual desire. The effect is not produced by therapeutic doses in man (5 mg. or 1/12 gr.), although it has been recommended as an aphrodisiac. Large doses produce excitement, cerebral congestion, vertigo, and gastric disturbance. Yohimbine has also been proposed to lower abnormally high blood pressure, but Lawrence found that it may produce a further rise with dangerous symptoms.

False Positive Pregnancy Reactions

Q.—*Assuming good technique, is it possible to get a positive result from an Aschheim–Zondek or Friedman test in a woman known neither to have a chorion-epithelioma nor to be pregnant? What are the conditions giving rise to this anomaly?*

A.—Yes, a positive reaction is occasionally obtained in conditions in which there is overactivity of the anterior lobe of the pituitary. It is sometimes seen, for instance, when the pituitary is released from the normal inhibition of the ovary, as at the menopause, and in some cases of genital tuberculosis associated with amenorrhoea. It has also been described in association with pituitary disease (such as acromegaly) and tumours of the midbrain. The occasional finding of a positive Aschheim–Zondek reaction in cases of genital carcinoma is probably explained by the fact that the patients with such lesions are mostly of menopausal age.

Sore Tongue

Q.—*What are the probable cause and the treatment in a case of sore tongue in which the tongue is furred centrally and has marked injection of papillae at the tip, extending about an inch (2.5 cm.) along the edge, and in which dental and blood disorders have been excluded, also vitamin deficiency and all known and evident dietetic irritants?*

A.—It is difficult to offer constructive suggestions in this case, for the common extrinsic causes of soreness of the tongue have been excluded and the appearances described are not characteristic. Sore tongue is sometimes the complaint when the underlying abnormality is xerostomia—for instance, in Sjögren's syndrome; hysteria must not be forgotten. In the absence of a clear-cut diagnosis the only possible treatment is palliative: avoidance of unduly hot or cold food and drink, and of physical and chemical irritants such as seasonings and smoking; and lubricant mouth-washes before meals, in which 1% amethocaine hydrochloride may be included if the discomfort is severe.

Circumcision

Q.—*A patient with an exceptionally long but easily retracted foreskin desires a circumcision. Is the "cuff" method of operation satisfactory, and would it enable the patient to carry on his normal sedentary duties without interruption?*

A.—The answer to this question depends on what is meant by the "cuff" method of circumcision and on what are the precise reasons for operating. If by the "cuff" method is meant the leaving of enough foreskin partially to cover the sensitive glans penis, and if the patient wants redundant foreskin removed merely to facilitate penile hygiene, this method should prove satisfactory. Discomfort after circumcision is in great part due to post-operative infection, and this can be reduced by the use of a penici'lin cream as a dressing. In any case, the interruption to his sedentary duties should be but a short one.

Letters and Notes

Raven's Intelligence Test

Mr. JOHN C. RAVEN (Dumfries) writes: May I draw attention to certain matters on which the person who answered the question "Is Raven's test—the 'progressive matrices'—satisfactory for estimating general intelligence?" was ill-informed (May 17, p. 706). Progressive matrices (1938) was never intended to be a test of "general intelligence." It was designed to assess a person's output of intellectual activity at the time of the test, and has proved to be the best test for this purpose yet produced. Only under certain circumstances does the so-called "K" factor affect the results obtained. There is no reason to assume that a person's output of intellectual activity is always the same. Data obtained with the matrices test indicate that it varies considerably in health and illness. This does not mean that the test is unreliable. Success in the test does not depend upon acquired knowledge. For this reason it is one of the most valuable tests for distinguishing backwardness due to loss of schooling from genuine mental deficiency. Adults' scores on the test decline with age. The fact that other tests fail to show this does not mean that they are better tests. It is often more difficult to answer questions than it is to ask them. Many readers of the *Journal* will, I think, be glad to hear that a book dealing with "The Assessment of Mental Development" is nearing completion; that an inquiry into variations in the intellectual activities of adults in health and illness is in hand; and that three derivatives of progressive matrices, designed for use with little children, with adults, and with adults above average in intellectual capacity, have just been completed.

Tinnitus

R. writes: The question and answer on the subject of tinnitus (May 17, p. 706) revives memories of my first weeks in practice when I was in the habit of giving maximum doses of all tinctures. An old lady consulted me about tinnitus from which she had suffered for years, and, forgetting that the dose of tincture of aconite was 2–5 min. (0.12–0.3 ml.), I prescribed 15 min. (0.9 ml.) t.i.d. I realized my mistake a few hours later and, terrified, called on the old lady. She told me that she had taken one dose immediately on getting home and that the tinnitus had stopped. I asked her to take no more "to see how long the effect would last." When I last saw her a year later the tinnitus had not returned.

Injection of Hydrocele

Prof. CHARLES WELLS (Liverpool) writes: I refer to the answer under "Any Questions?" (May 10, p. 665). All the sclerosing solutions are very painful indeed, and a local anaesthetic should be injected into the sac (and subsequently run out again) before the irritant is put in. A second important point is the risk of injecting the fluid into the tissues outside the tunica. The cannula should be pushed well home when the sac is still full.

Treatment of Seborrhoea

Mr. THOMAS WILSON, F.R.C.S.I. (London, N.W.6) writes: I treated a similar case to that published (May 17, p. 705). (1) Wash the scalp in warm water; then dry and apply ung. metallorum to the roots of the hair. (2) A *Staph. aureus* vaccine. (3) A mixture containing mag. sulph., acid sulph. dil., spt. chloroform., nuc. vomicae., inf. gent. co. (4) Ung. metallorum to the axilla and the genito-crural regions. My case is now quite well.

Surgical Rubber Gloves

Doctors in private, general, or consulting practice requiring surgical rubber gloves for professional use are reminded that they should apply to the Secretary of the Central Medical War Committee, British Medical Association House, Tavistock Square, London, W.C.1, marking the envelope "Gloves" in the top left-hand corner and enclosing a stamped addressed envelope for reply. They will then receive a booklet of six certificates.

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